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(1) Hopkins, J. G., et al: J. Invest. Dermat., 7, 239-253, 1946.

(2) Sullivan, M., and Fishbein, H. A.: J. Invest. Dermat., 10, 293-299, 1948.

(3) Peck, S. M., and Rosenfeld, H.: J. Invest. Dermat., 1, 237-265, 1938.

(4) Schwartz, L., et al: J.A.M.A., 132, 58-62, 1946.

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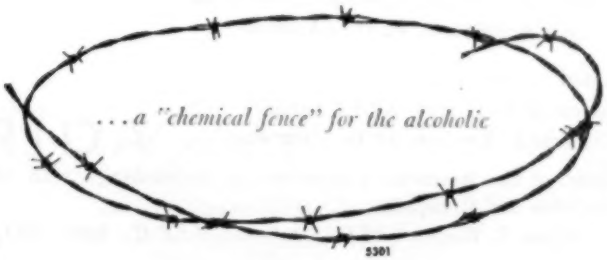

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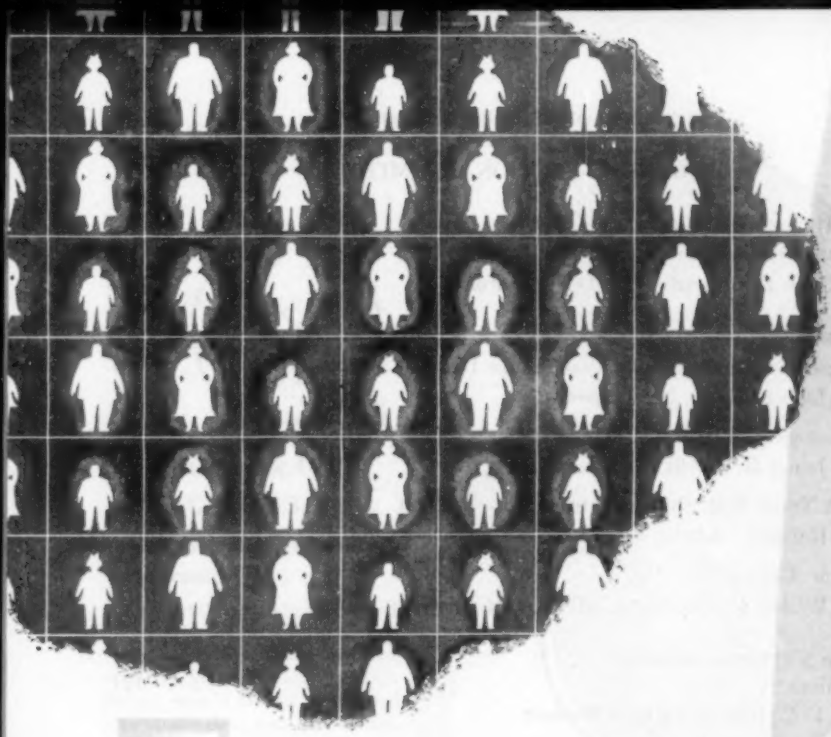

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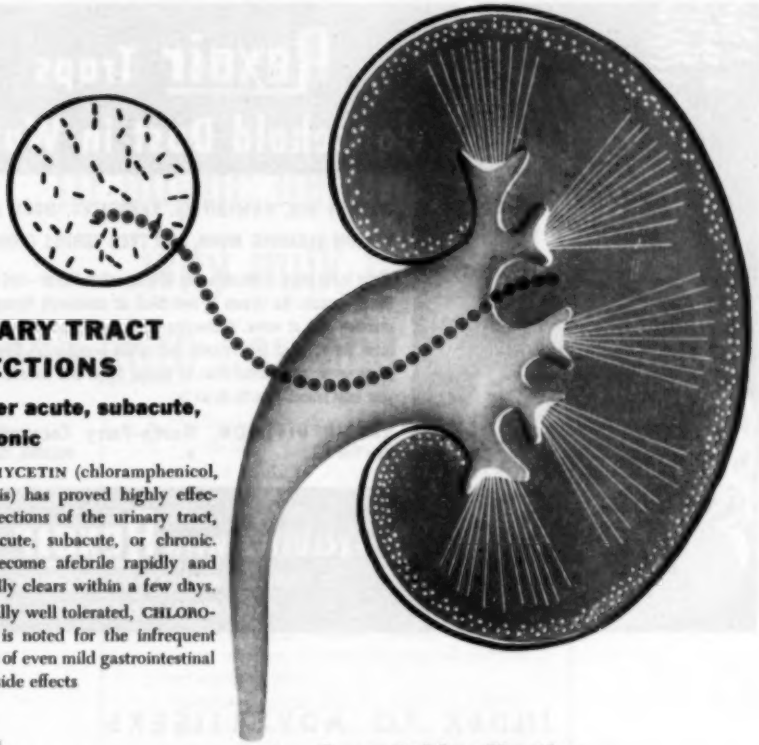

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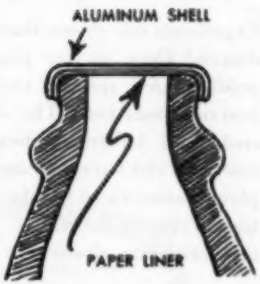

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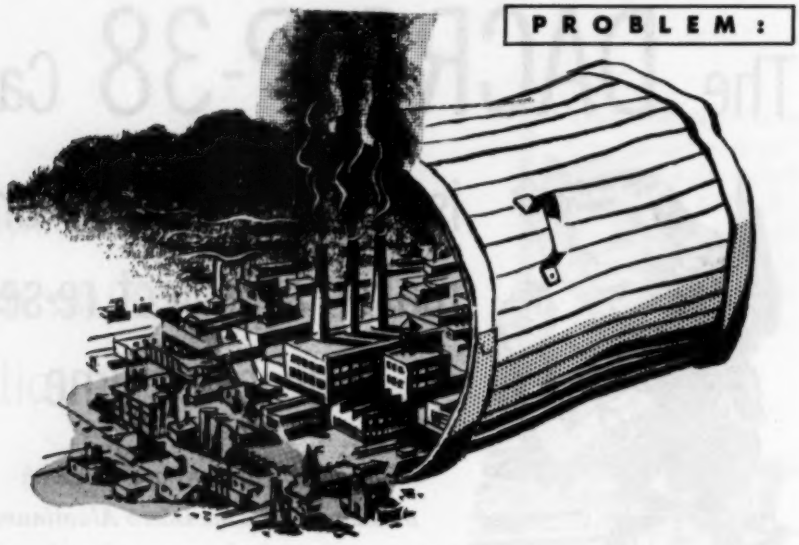

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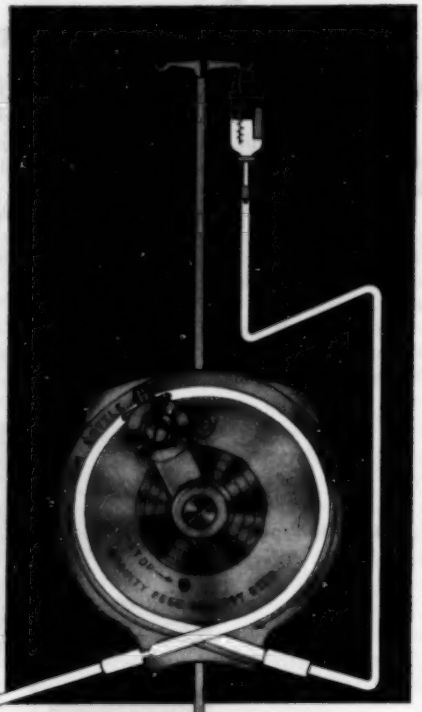

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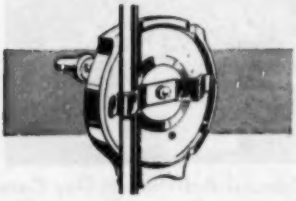

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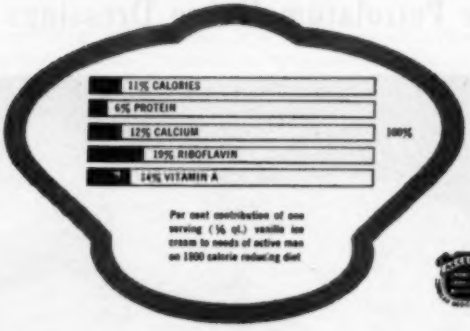
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[1]Weight Reduction Through Diet. A documentary motion picture produced in 1951. National Dairy Council.

[2]Dahlberg, A. C. and Loosli, J. K.: Nutritive value of commercial ice cream. J. Am. Diet. Assn. *24*:20 (Jan.) 1948.

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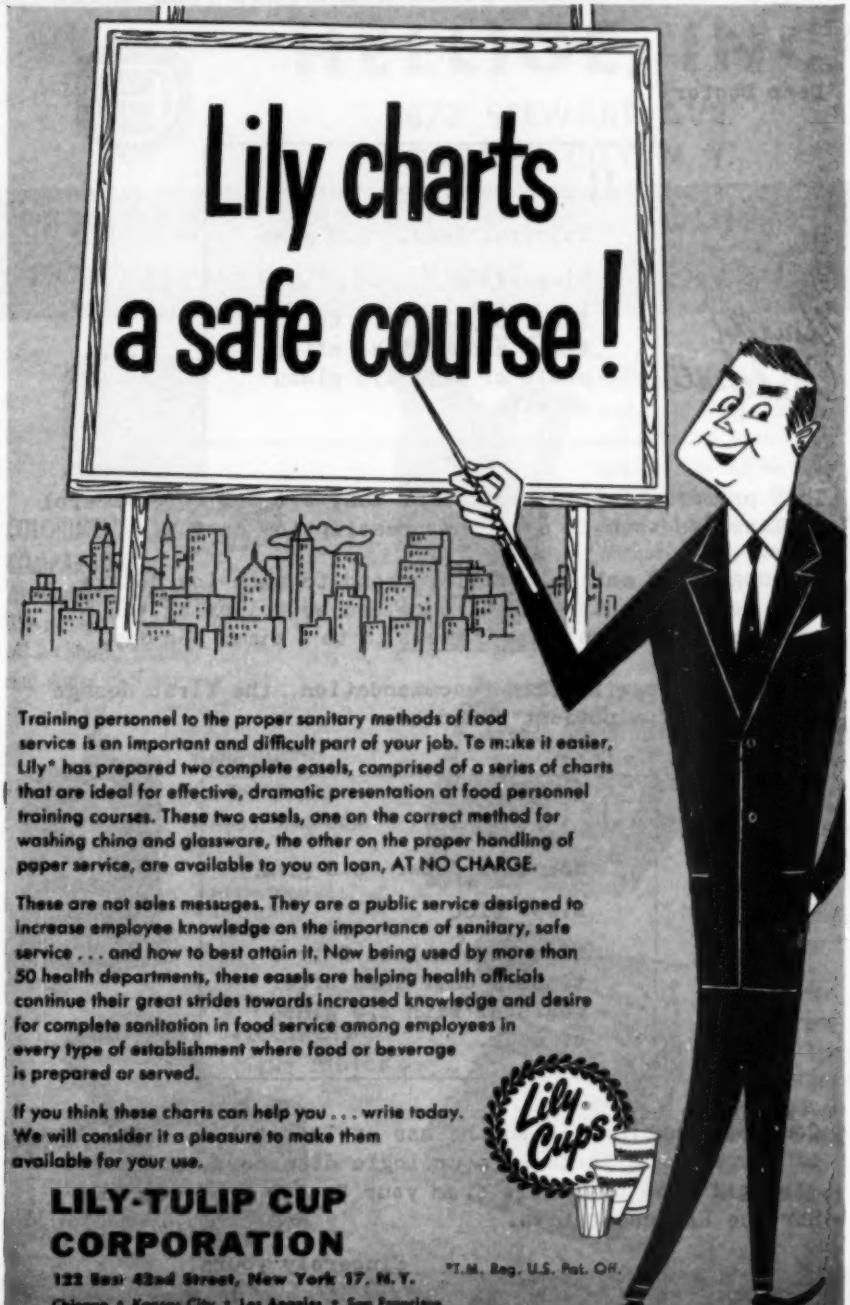
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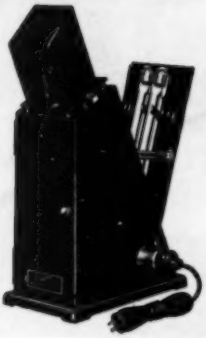

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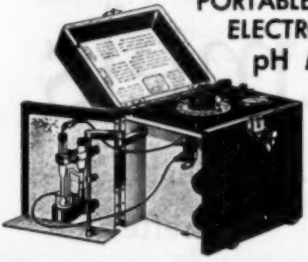

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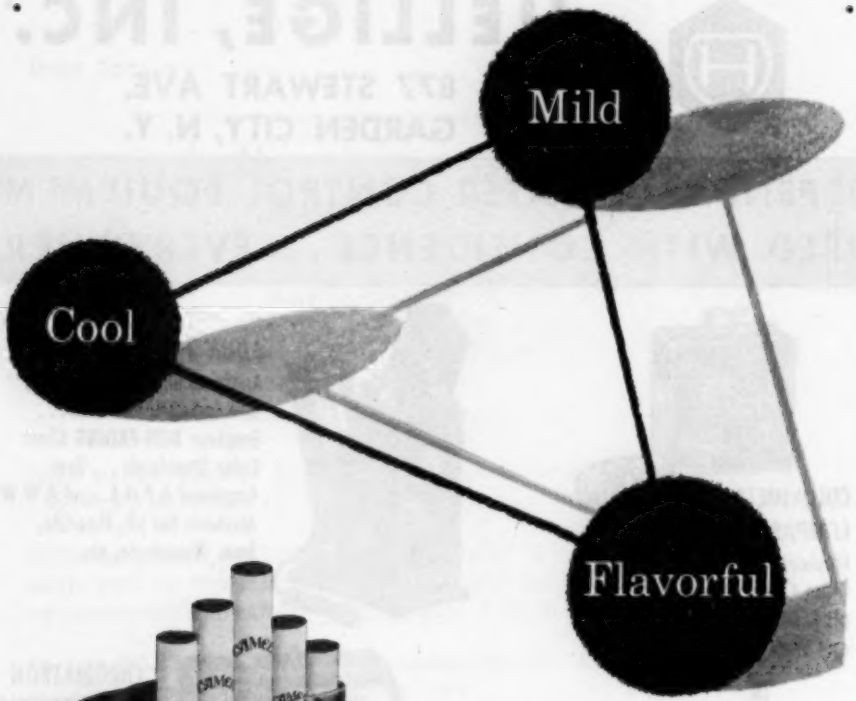

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American Journal of Public Health
and THE NATION'S HEALTH

Volume 43 May, 1953 Number 5

The nutritionist's contribution to public health lies not solely in finding ways to induce people to eat the right foods "in sickness and in health." In addition he must counteract the damage done by blatant food fadism and outmoded ideas of dietary therapy. It is a challenging job to which many may contribute.

The Importance of Food in Preventive Medicine*

CONRAD A. ELVEHJEM, PH.D., F.A.P.H.A.
Chairman, Department of Biochemistry, and Dean, Graduate School, University of Wisconsin, Madison, Wis.

IT has been said that if we could get the average medical practitioner to use our present knowledge of nutrition effectively we would see distinct improvements in the health of our people.

I realize, perhaps as well as anyone, the difficulties in bringing this about. One excuse has been that the medical curriculum is now so crowded that it is difficult to add any additional courses for the medical students. This is true, but far from the only reason. There are many factors involved, for example, the effect of nutrition is not spectacular and therefore does not attract the attention which drugs, antibiotics, etc., do. In this connection I might add that with the wonder drugs for the treatment of the infectious diseases and modern sanitation, which prevents such diseases as typhoid fever, nutrition remains as the most important environmental factor affecting our health. Another factor is that the physician must treat the individual patient and must attempt to diagnose the specific cause of the disease. In doing so there may be certain immediate causes which must be considered first, and the effects of nutrition are usually secondary and rather difficult to recognize.

It is not surprising that even those interested in the relation of food to the prevention of disease think about food as having a positive toxic effect. Eijkman believed that beriberi was caused by the metabolism of excessive quantities of starch. You are all familiar with the long controversy over pellagra, whether it was due to an in-

* Presented before the Food and Nutrition Section of the American Public Health Association at the Eightieth Annual Meeting in Cleveland, Ohio, October 22, 1952.

fectious agent or whether it was due to the consumption of excessive quantities of corn. In both of these cases it was difficult to demonstrate that food had any specific value until the vitamin concerned was identified. Even when yeast, which is now known to be high in nicotinic acid, was available, it was difficult to demonstrate that a positive factor was involved in the prevention of pellagra. For many years clinicians recommended yeast for pellagrins, but they refused to eat it. If they had been fortunate enough to recommend a piece of meat the demonstration of the nutritional significance of pellagra probably would have come much earlier.

As soon as niacin was available for therapy in pellagra no further questions were encountered. Therefore, therapeutic medicine often comes before preventive medicine. It is difficult to know what we want to prevent until the specific disease develops for one reason or another, either in a small number of individuals or in large groups of people in various areas of the world. The development of our knowledge of vitamins and minerals and their importance in nutrition has come largely from observations on specific deficiencies in human beings, although much work also has come from the laboratory where deficiencies are produced in animals on highly purified rations. Thus, we have today two groups of vitamins and minerals, those which are generally accepted to be of significance in human nutrition and those which are questioned by many medical people. In general there is no real difference between these two groups of nutrients because all of them take part in normal metabolism. The difference is due to the fact that in one case there is less likelihood that the combination of foods eaten by large groups of people will produce a deficiency, while in the other case the combination may allow a deficiency.

After these relationships are thoroughly understood, we are ready to practice real preventive medicine. Perhaps it should not be called medicine. Should it be called a sound program for optimum nutrition? It is interesting that much is being written in this area. Unfortunately, some of it is by faddists, but much of it is by sound scientific workers. One example, in the latter case, is the book *Clinical Nutrition* edited by Norman Jolliffe, F. F. Tisdall, and Paul R. Cannon. After discussing the diagnosis of nutritional deficiency and the specific factors involved in the prevention of nutritional deficiencies, the latter part of the book is given over to principles of nutritional therapy. Dr. Jolliffe points out that in the earlier part of the book certain statements appear so frequently that they may be considered axiomatic. Among these are: "It is easier to prevent than to cure a deficiency disease." "A satisfactory diet is the best foundation for both the prevention and treatment of deficiency diseases." He goes on to say, "The prevention of nutritional inadequacies is largely the responsibility of government agencies and public health authorities." This may be true for widely recognized diseases which may include large groups of people, but many factors are involved. The first is the encouragement of farmers and private industry to produce foods of high quality and to handle them in such a way as to reach the consumer in the best possible manner.

Another factor relates to an intensive health education program and an effort to change food habits when necessary. In this case the private physicians can probably do more to change food habits than almost any other group of individuals. Every patient usually wants dietary advice, but unfortunately the medical people often are not trained to give this advice. They either tell you to eat plenty of fresh fruits and vegetables or eat what you want and then

take a vitamin capsule. In some cases the advice may merely be incomplete, but in other cases the advice may actually be erroneous. The doctor must be given the correct information to transmit to the patient. Much of this education must come after he has finished medical school because the field of nutrition is moving ahead at a rapid pace.

It is not only necessary to promote positive information but to overcome the false teachings, whether it be deliberate or due to inertia, which prevent the acceptance of anything which is new. The worst enemy is the group of food faddists and the most vicious of these are the individuals who, by one method or another, place the M.D. after their name. For example, in a recent trade publication the following reference was made to nutrition in pregnancy. A description was given of the early work at the University of Wisconsin when cows were fed on single grain rations. Those fed on the wheat ration did poorly, and we know today this was due to lack of vitamin A and calcium. Those on oats did a little better and those on corn did remarkably well because the yellow pigment in corn supplied vitamin A. Today all this information is adequately used in the preparation of sound rations for farm animals. However, this is the conclusion which the writer gave. "From this study made on cows it is quite apparent if an expectant mother wishes to have her infant strong and rugged at birth she should not eat foods made from wheat or eat wheat cereals. To do so is to invite disaster. In the light of this study the bread should be corn bread or muffins." Well, we all know that if this were done the mother would develop probably a more severe deficiency, namely, pellagra. The reason the cow did not develop vitamin B deficiencies on some of these rations was due to the extensive synthesis of B vitamins in the rumen of the cow. How anyone who pretends to know any modern nutrition can make statements of this type, I do not know. There should be some method in this country whereby legal action could be taken against individuals of this kind.

The other group includes the physicians and some nutritionists who have accepted the general idea that in order to treat certain diseases it is necessary to remove certain types of foods. It is not so many years ago that the nutritional treatment recommended by a physician was often the removal of protein from the diet. Thus, the patient was asked to eliminate meat from his diet and often eggs and milk. Generally this was done with all sincerity. In contrast, think of the dependence now placed upon protein in the treatment of patients who have been injured or who have undergone surgical operations or the importance of proteins in resistance to infection. Today we hear more about the high protein diet in the treatment of diseases of the liver, in methods of reducing, etc.

The increased interest in protein began largely with the work of Rose when he clearly differentiated between the dispensable and indispensable amino acids. When he demonstrated that pure amino acids could be used in the human economy and that each amino acid had certain specific effects he opened a new era in nutrition. As I mentioned before, we cannot have optimum nutrition until we know something about each of the nutrients needed by the body, something about the quantitative requirement, and something about the distribution of these nutrients in our food materials. We have this information to a very large extent today, and it becomes largely a matter of calculating the adequacy of typical diets used in different parts of the country. I believe we are justified in saying that we cannot expect the average practicing physician to take time to make these calculations.

However, they should be sympathetic to this work and use the results carefully prepared by nutritionists, dieticians, etc.

However, this is merely the background and there are many other areas where food is important in preventive medicine. The first of these is the so-called "conditioned deficiencies" such as diabetes, colitis, peptic ulcers, anemia, etc. In other words, here we have a combination of a nutritional deficiency with an organic disease. Two individuals may have the same available source of vitamin B_{12}, but one may develop pernicious anemia and the other one will not. Two individuals may consume the same amount of sugar; one may develop diabetes, the other one will not. Even though we can control diabetes by the injection of insulin or pernicious anemia by the injection of vitamin B_{12} concentrates or even the pure crystalline material, it does not mean that we do not have a great deal to learn about the place of food in the prevention of these diseases. I would not be surprised to learn that pernicious anemia could be prevented through the proper use of nutrition. This does not mean an adequate supply of vitamin B_{12}, but it means factors which may affect the absorption of vitamin B_{12} from the intestinal tract.

Another area where food is of real importance in preventive medicine is in the handling of the so-called febrile diseases. During fever there is an increased metabolism and therefore an increased requirement of certain nutrients. There is also an increased destruction of body tissues with the loss of nitrogen and often a disturbed water balance. In order to meet these requirements it is not only necessary to prescribe an increased protein intake but to cater to the patient's likes and dislikes in food and employ those procedures which will make it attractive. Perhaps one of the most difficult places to use food in preventive medicine is in the case of gastrointestinal diseases. Here we have malfunction of the gastrointestinal tract which may influence the absorption and utilization of nutrients or allow certain putrefactive changes which produce toxic substances. We are especially fortunate today that many of our nutrients can be supplied through intravenous feeding, including even such materials as fat. All of these technics may be misused or overused since eventually the patient must get back on a nutritious diet. The sooner this can be done and with the least deviation, the more rapid the progress will be. The treatment of hepatic disease is based on the application of our newer knowledge of nutrition. Much progress has been made and very significant improvements have been demonstrated. However, we probably still have much to learn in this area.

At this point I would like to mention very briefly some of the work in our own laboratory on the effect of various amino acids on changes in the enzymes of the liver. One would expect that the structure of the body would suffer before the enzyme system in vital organs such as the liver would suffer. However, we find a rapid decrease in liver enzymes as a result of a deficiency of certain amino acids. The significance of these enzyme changes is not as yet understood, but it is obvious that the metabolism of the liver is not normal and diseased conditions may result either suddenly or after long delayed periods. I also want to point out that these changes can be aggravated by an imbalance of amino acids which again emphasizes the importance of supplying amino acids in foods rather than in combinations which may be quite different than those usually encountered in food materials. It is true that the amino acids must be in available form in the foods but experimental findings indicate that the amino acids in, at least our

most common protein foods, are readily released.

In spite of the fact that the field of pediatrics is probably as far advanced in relation to nutrition as any field of medicine, I believe that much is still to be done in this area. I base this on the fact that any slight changes in metabolism during infancy may produce conditions which affect the health of the individual during his entire lifetime. I have been greatly impressed by the sudden changes which may occur in the livers of rats fed diets low in protein, low in choline, and low in vitamin B_{12}. Within 7–10 days the liver fat may increase from a normal of 20 per cent on dry weight basis to 60 per cent or more. What effect will this change have upon the health of the animal in later life? In this connection there are two factors involved—one is the education of the mother and the other, of course, is the preparation and availability of special foods for infants.

In the next age group I suppose the greatest place of nutrition is in the so-called reducing diets. Here I want to mention that this is purely a mathematical problem, that if one wishes to reduce, the total fuel taken in must be below the total fuel required. Now this can be accomplished in many different ways and it is, of course, easier to cut down your food intake by eating a large steak than it is by reducing the ordinary foods that you eat at each meal. This brings up the very important question—what will the high intake of protein do to the average individual? As I mentioned previously, many doctors used to treat many diseases by eliminating protein from the diet; today we seem to be swinging the pendulum in the other direction and treating all difficulties with a high protein diet. I deplore these sudden changes in diets, of so-called normal individuals, without knowing more about the consequences. As far as we can tell, there should be no real harm provided all other nutrients are supplied. I imagine the difficulties encountered in earlier attempts to use high protein diets were due to an inadequate intake of certain minerals or vitamins. We have attempted to answer this question in a very preliminary way by feeding a diet containing 90 per cent protein for a considerable period of time to rats without ill effect. We do not know what the third, fifth, or twenty-fifth generation will look like on a diet of this kind. I do not believe we need to be too worried because the economic picture will take care of this problem. However, it is the sudden decrease in the protein of the diet which worries me more than the consistently high intake of protein. Caloric intake is probably related to other disease conditions such as cancer, cardiovascular disease, and I might even mention dental caries. An excessive intake of calories may be bad for many reasons.

Finally, we come to geriatrics or perhaps a more pleasant term, nutrition for the latter years of life. Ancel Keys has expressed it as follows: "Part of the problem of providing nutritional help for older persons consists in countering the claims of food faddists, the purveyors of special nostrums offered for nutritional purposes, and the writers who find the ready sale for books and articles promising miracles from peculiar diets." This, perhaps is a good place to end my discussion since, I believe, it emphasizes that some of our difficulty has been due to lack of sound information regarding nutrition and metabolism. We have seen certain spectacular effects of certain nutrients in the treatment of deficiency diseases; we have seen spectacular results in laboratory animals. In doing so, we have tended to emphasize the importance of specific nutrients in nutrition. Sound nutrition depends upon a balance between all nutrients at a given time. This balance is best obtained through

the consumption of common foods that are to our liking. Perhaps we have gone too far in the preparation of very attractive foods, in so far as marketing and cooking are concerned, and we may have to use some resistance in the consumption of these very attractive foods and limit our caloric intake to one which is suitable for our particular engine. The slogan today seems to be to eat less in the interest of better health. Even this may be carried too far. Some call attention to positive factors which accelerate aging and the onset of degenerative diseases. Physicians today are advising patients to cut down or omit entirely, eggs, butter, milk, and organ meats from their diets. I like the statement recently made by Dr. Maynard:

"Large stakes are here at issue. Arteriosclerosis is a serious degenerative disease. The foods in question are of primary importance for an adequate diet. Particularly in terms of our food habits, good nutrition would seem impossible without them. They are also the products of the livestock and poultry industry. Getting the facts as rapidly as possible is of vital concern to agriculture, as well as to human nutrition and health. If animal products have any limitations, it is certainly in the long-term interests of the livestock industry, and of other industries concerned, to know about them. They should join in supporting research to that end, not merely leave it to those who would rule out animal products without considering all the issues involved.

"Food fadism and bad dietary practices thrive on half-truths and speculations regarding nutritional questions which have not been adequately studied —to the detriment of both consumers and agriculture. Carefully controlled research is called for to supply the answers."

Directory of Psychiatric Services

A directory of psychiatric services in the United States and territories has just been published by the National Association for Mental Health. It lists 475 full-time and 627 part-time psychiatric clinics in operation in 1952. Full-time clinics have more than doubled since the last survey in 1947, thus representing a marked increase in clinic service for patients with mental or emotional disorders. During 1952, 225,000 new patients were seen by the clinics.

In spite of the increase, the services still "do little more than scratch the surface," according to George S. Stevenson, M.D., medical director of the Association. "For every patient seen by the clinics, 10 to 20 more are in need of their services. Many marriages might be saved, school or job problems averted, and crimes prevented if victims could get help in time from psychiatric clinics."

In addition to clinics, the directory lists state mental hospitals and governmental health authorities, Veterans Administration and other federal mental hospitals, and mental health associations.

National Association for Mental Health, 1790 Broadway, New York 19, $1.25.

Two statements that might almost be accepted as axiomatic are these. Swimming is a healthy sport. Bathers will catch gastrointestinal diseases from swimming in polluted water. Both will appear somewhat less than axiomatic in the light of the findings of this far-ranging study—a report not to be missed.

Studies of Bathing Water Quality and Health*

ALBERT H. STEVENSON

Deputy Officer in Charge, Environmental Health Center, Public Health Service, Cincinnati, Ohio

IN an attempt to determine the relationship between natural bathing water quality and its effect upon the health of the bather, a series of field studies were recently undertaken by the Environmental Health Center. The specific objectives of the studies were: to determine what frequency of swimming might be expected from the population groups chosen; to determine what relative increase in illness incidence might be expected from swimming in even the cleanest waters; and to determine what differences in illness incidence might be expected from swimming in waters containing various degrees of bacterial pollution.

The attainment of these objectives, even in part, was recognized at the beginning as a major task and, after several years of work, many questions still remain unanswered.

Three studies of bathing waters and population groups in different geographical locations were designed so that factual data might be secured for the use of health administrators in determining what quality of bathing water would be acceptable to them in view of local conditions in individual states and areas. These studies illustrate the necessity for a cooperative approach in tackling environmental health problems. They represent the joint effort of epidemiologists, engineers, health educators, statisticians, and specialists in the physical and biological sciences working in harmony with health officers, other state and municipal officials, and the public.

It should be noted that in these studies consideration was not given to the less tangible, but nonetheless, beneficial aspects of outdoor swimming, such as fresh air, mental relaxation, moderate amounts of sunshine, physical exercise, etc.

The studies were conducted on (1) a great lake, (2) an inland river and a fresh water recirculating pool, and (3) a tidal water. Specifically, the locations were Lake Michigan at Chicago, Ill., the Ohio River at Dayton, Ky., and a nearby swimming pool in the same area; and finally Long Island Sound at New Rochelle and Mamaroneck, N. Y.

GENERAL METHODS

The general methods used were similar for the three studies, although specific improvements in details were made with each succeeding project.

* Presented before the Second Session of the Engineering Section of the American Public Health Association at the Eightieth Annual Meeting in Cleveland, Ohio, October 23, 1952.

In each study, two bathing areas were selected on the basis of the following criteria:

1. The beach waters had substantial differences in bacterial quality based upon historical records of water quality available. Unfortunately, subsequent laboratory examinations did not always show such differences.
2. Sanitary surveys indicated that the water quality was not subject to rapid fluctuation, although changes over a period of days were desirable.
3. The areas were in close proximity to resident population groups of 1,500 or more families.
4. The areas were used frequently for swimming by residents of the adjacent areas. Nonswimmers of the same age and sex and living in the same areas formed one of the control groups used. (Nonswimmers were persons who did no swimming during the course of the study.)

In order to eliminate as many variable factors as possible, the population groups selected for each study were from similar socioeconomic levels and from the same general geographic area.

After selection of the study areas, six major field activities were undertaken during the summer periods.

1. A public information campaign was undertaken with the assistance of local public health educators in the area. This campaign was aimed first at the entire community to acquaint it with the general purposes of the project, and secondly, and more intensively, at the selected study areas to focus on them the more detailed information on the project needs. The usual information methods were used, including radio and television broadcasts, newspaper articles, distribution of flyers, and talks to local medical societies, PTA groups, and other civic bodies.
2. Project workers visited the families in the selected areas to secure their agreement to cooperate in the study. Cooperating families were furnished with a calendar record form to record swimming and illness experience daily and were instructed in how to fill it out. The diseases recorded on the basis of a familial diagnosis were eye, ear, nose, and throat ailments, gastrointestinal disturbances and skin irritations.
3. Water quality determinations were made on samples collected from the selected beaches at intervals necessary to observe significant fluctuations. Associated with this, information on rainfall, temperature, wind, flow conditions, sanitary conditions, and other physical factors was obtained.
4. Bathing load observations were made at the time of sample collection for use as a general check.
5. Follow-up visits to households participating in the study were made two or three times during the swimming season and associated with this the public information campaign was continued.
6. At the end of the study period, each household was visited and as necessary revisited to insure final completion and pick-up of the calendar record forms.

It was interesting and encouraging to note that after being in possession of these forms for about two months, at the end of each study, participating families returned about 80 per cent of them in usable form, although there was evidence that in some instances the calendar forms were not kept up on a day-to-day basis.

Upon completion of the field and laboratory aspects of the study, the major job of statistical analysis remained. The swimming and illness experience for each individual in the study was transferred to punch cards for machine tabulation. Statistical analysis of the results was then made by two or more of three methods.

1. Observation of the prevalence and incidence of illness in each area as related to swimming experience and average water quality over the entire period.
2. Selection of periods of significant poor bathing water quality and good quality, followed by analysis of swimming experience and illness incurred during these periods and for the days immediately succeeding them.
3. Observation of the number of people having an onset of illness a specified number of days after swimming and the comparative water quality on the day when swimming occurred.

INDIVIDUAL STUDY CONDITIONS

To be more specific, each study presented individual problems in the application of the general methods previously

TABLE 1

Basic Data Summary

Study	Group	Median Water Quality at Study Bathing Area—Coliform MPN per 100 ml.	Number of Persons in Study	Number of Person-Days of Usable Record	Percentage of Person-Days of Total Swimming	Number of Illnesses of all Types Recorded per 1,000 Person-Days
Great Lakes	Chicago—North	91	5,124	154,453	10.3	7.1
	Chicago—South	190		138,158	10.7	8.3
Inland River and Pool	Dayton and Bellevue	2,700 *	7,520	242,094	4.5	8.8
Tidal Water	New Rochelle	610	9,520	269,629	7.3	5.3
	Mamaroneck	253		300,503	8.0	6.2

* Ohio River at Dayton Bar. Pool water quality less than 3.0.

described. The conditions encountered in each study follow:

I. Great Lakes—Lake Michigan at Chicago, Ill.[1]

The Chicago study was the first of its type to be undertaken. The bathing areas selected were immediately adjacent to residential areas comprising apartment buildings and individual houses in the middle- and upper middle-income brackets. The population groups were selected in the belief that most of the swimming done by residents would be at the selected beaches. This was borne out in the subsequent study. The two population groups comprised about 1,600 families, or a total of 5,124 individuals, fairly evenly divided between the two areas. The number of days of observation averaged 57.1 per person. A summary of the basic data for this and the subsequent studies is shown in Table 1.

It will be noted that the median water quality at the two beaches, expressed as coliform most probable number per 100 ml., was 91 at the North Beach and 190 at the South Beach. The maximum and minimum quality observed at any of the sampling points at the North Beach was 3,500 and 9.1 respectively, and at the South Beach 24,000 and 23. Significant individual variations in water quality at the beaches were also taken into consideration in the analysis.

The total number of illnesses recorded in the study was 2,237, fairly evenly divided between the two areas. Nose and throat ailments represented about half of the illnesses reported and gastrointestinal disturbances almost one-fifth. The balance included eye and ear ailments, skin irritations, and various combinations of illnesses.

The over-all percentage of person-days on which swimming was done (hereafter referred to as person-days of swimming) for the two groups was in excess of 10 for each group, with the preponderance of it being done at the selected study beaches. There was no significant difference between males and females. As would be expected, individuals reporting one or more chronic ailments did somewhat less swimming, but even these groups swam 8–10 per cent of the days of observation.

II. Inland River and Pool—Ohio River at Dayton, Ky., and Tacoma Park Pool[2]

The second comparative study was made in northern Kentucky. A relatively poor quality water was selected in the Ohio River at Dayton Bar. No other convenient and regularly used bathing area was available on the Ohio River. Hence, it was decided to use

Tacoma Park Pool, a recirculating fresh water pool located in Dayton, Ky., as the second bathing area for comparative purposes.

The median water quality at Dayton Bar was 2,700 coliform organisms expressed as most probable number per 100 ml. The maximum and minimum coliform densities were 160,000 and 230, respectively. On the other hand, the Tacoma Park Pool water generally showed no gas production in the 10 ml. portions or a most probable number of coliforms of less than 3.0. The residual chlorine level in the pool was maintained at 0.1 ppm. to 0.75 ppm. during most of the study period. On a few occasions residuals of less than 0.1 were noted and for the last five days of the study, residuals of 1–2 ppm. were maintained.

Diving facilities were available at the Tacoma Park Pool but not at the river beach.

The population group used included 7,520 individuals mostly residents of Dayton and Bellevue, Ky. In this study, there was no particular geographical separation between "river" and "pool" swimmers in contrast to the marked separation between the two beach groups in the Chicago study. The Kentucky study group represented middle-income families dwelling, for the most part, in single family houses.

A poliomyelitis outbreak in northern Kentucky during the summer effectively reduced the frequency of swimming to the near vanishing point late in July, which resulted in limiting the length of the study. The number of days of observation averaged 32.2 per person for the abbreviated study period. The basic data is summarized in Table 1. It should be noted also that the swimming experience observed was divided roughly into one-third in the river, one-third in the pool, and one-third at other swimming areas. The total number of illnesses of all types recorded was 2,130. The rate of 8.8 per 1,000 person-days was somewhat more than was observed in Chicago.

III. Tidal Waters—Long Island Sound at New Rochelle and Mamaroneck, N. Y.[3]

The third comparative study was made in tidal waters off Westchester County, N. Y. Municipal beaches on Long Island Sound located at New Rochelle and Mamaroneck, respectively, were chosen. Adjacent population groups in the two communities were selected in residential areas of the middle- and upper middle-income groups.

The median water quality at the two beaches measured as most probable number of coliforms per 100 ml. was 610 at New Rochelle and 253 at Mamaroneck. The maximum and minimum coliform levels determined for both beaches were <30 and 460,000, respectively. The tidal factor entered into this study. At New Rochelle the coliform densities were somewhat higher during flood than during ebb tide, with poorest quality generally occurring during the first half of the flood tide. It should also be noted that poorest water quality generally followed storms and the operation of storm overflow sewers, but bathing was less frequent during these periods.

The New Rochelle population group numbered 4,590 individuals, the Mamaroneck group 4,930. The number of days of observation averaged 60 per person. As is shown in Table 1, the percentage of person-days of total swimming reported by the two groups is considerably more than was recorded in Kentucky but less than that noted in Chicago. However, more than one-fourth of this swimming was done at locations other than that of the study beaches.

The total number of illnesses of all types was 3,300 for the two groups. At New Rochelle, this represented 5.3 per 1,000 person-days and at Mamaroneck

TABLE 2

Percentage of Total Person-Days With Reported Swimming at Designated Study Areas by Age Groups

	Great Lakes				*Inland River and Pool* †				*Tidal Water* †			
	North Beach		*South Beach*		*River*		*Pool*		*New Rochelle*		*Mamaroneck*	
Age Group	*Males*	*Females*	*Males*	*Females*	*M*	*F*	*M*	*F*	*Male*	*Female*	*Male*	*Female*
Persons with no chronic conditions												
Years												
Under 5	15.8	17.0	13.3	12.7	0.8	0.8	0.5	0.4	5.5	6.4	6.2	8.3
5– 9	25.6	25.2	23.2	22.9	1.5	2.1	2.2	2.0	8.5	8.6	14.0	13.5
10–19	28.6	27.7	32.9	25.8	3.9	2.0	4.6	3.9	10.0	11.2	11.4	15.7
20–44	6.4	9.1	8.1	9.0	2.1	1.0	0.6	0.9	2.3	3.6	2.9	5.3
45–64	4.3	3.6	3.3	1.6	0.8	0.3	0.1	0.2	2.6	1.9	1.2	2.8
over 64	0.4§	0.0§	†† 0.7	0.1§	0.2§	‡	‡	‡	0.8	2.2	0.9	0.8
Age unknown	1.7	2.2	8.1	8.9	5.4	0.6§	6.2	12.1	3.6	4.0	1.6§	9.6
All ages	10.5	10.9	11.1	10.5	2.0	1.2	1.5	1.5	4.3	5.4	5.3	7.4
Persons with one or more chronic conditions												
Years												
Under 5	13.2	21.8	2.1	30.8	0.4§	0.2§	0.2§	0.5§	2.3	3.0§	8.0	6.6
5– 9	19.1	9.0	31.9	21.2	0.3§	0.8§	2.4	1.7§	10.8	5.6	15.3	17.9
10–19	23.5	23.0	34.0	26.8	3.1	1.0§	4.0	7.1	11.1	6.7	12.9	26.0
20–44	6.0	7.6	6.4	8.3	1.5	1.1	1.3	0.7	1.6	4.1	3.3	5.3
45–64	1.9	1.6	3.7	4.1	1.5	‡	0.5§	0.1§	0.6§	1.2	1.7	6.4
over 64	‡	‡	0.4§	‡	‡	‡	‡	‡	0.7§	1.0§	‡	‡
Age unknown	16.3	5.3	‡	‡	**	**	**	**	**	2.2§	‡	**
All ages	8.7	8.0	9.9	9.7	1.6	0.8	1.5	1.2	3.7	3.6	5.6	7.7

† Approximately 50 per cent additional swimming was done by the study group in nonstudy areas
‡ Numerator is zero
** Denominator is zero
§ Based on less than 10 in the numerator
†† Less than 0.05

6.2, the lowest rates observed in any of the three surveys.

RESULTS

The over-all comparative data for the three studies have been summarized in Table 1. However, the most significant results are obtained by more selective analysis and observation of smaller groups and wider ranges of water quality.

With respect to the first specific objective of the studies, the swimming experience of various groups at the bathing areas under study is shown in Table 2. The percentage of total person-days of swimming is given for males and females with and without reported chronic conditions and subdivided into age groups. From this table, it is apparent that there was no appreciable difference in the amount of swimming done by males and females of all ages at the Chicago beaches or in Tacoma Park Pool. The males showed a higher tendency to swim in the Ohio River and the females to use the Westchester County beaches. Surprisingly, the amount of swimming done by persons reporting one or more chronic conditions approached and in some cases exceeded that done by individuals reporting no chronic conditions. However, most of the chronic conditions noted were of a minor nature, allergies being particularly prominent.

In almost every instance, the greatest amount of swimming was done by persons in the 10- to 19-year age group. For the three studies, the greatest amount was done by males at the South

Beach in Chicago where they averaged swimming every third day during the study season for the entire group, including swimmers and nonswimmers. The second largest amount of swimming was done by persons in the 5- to 9-year age group and closely approached the amount of the older children.

In Chicago and in Westchester County the youngest children, under 5 years of age, exceeded the amount of swimming done by adults in the 20- to 44-year age group by more than 50 per cent. The youngest children averaged a trip to the beach once every 6–18 days. However, at Tacoma Park Pool and the Ohio River, very little bathing was recorded for the "under 5-year old" group.

As would be expected, the age groups over 44 years of age did the least amount of swimming.

The total amount of swimming at the individual bathing areas varied in accordance with its accessibility from the residence area, size of population group, availability of other swimming areas, cost, attractiveness of bathing area, and weather. The swimming experience at the designated areas was greatest at Chicago, roughly half as much in Westchester County, and only about 15 per cent as great in Tacoma Park Pool and the Ohio River.

The respective over-all illness incidence rates per 1,000 person-days among nonswimmers at each of the bathing areas were:

North Beach, Chicago	3.7
South Beach, Chicago	5.6
Dayton-Bellevue	7.4
New Rochelle	3.3
Mamaroneck	3.3

An approximation of the relative increase in illness incidence from swimming in relatively clean waters listed as the second specific objective is shown in Table 3. The ratio of illness incidence is given for Chicago groups doing different amounts of swimming over the entire period as compared with that for nonswimmers. In developing this table, age-specific illness rates were applied to the various age groups in each category. The rates for all ages were then adjusted to take into account differences in age distribution of the populations in the subgroups. In this crude comparison, no significant correlation was observed which could be attributed to swimming in natural waters of different quality at the areas studied. However, in practically every instance the illness incidence among swimmers was higher than that among the nonswimmers. This was expected inasmuch as water is an abnormal habitat for man regardless of its bacterial quality. The illness incidence increased for progressively higher swimming frequencies, but the groups doing the most swimming tended to show less rise in illness incidence and in several instances a marked decrease. This may well be explained by the selective physical characteristics of individuals in the group which did the most swimming, since illness occurrence would prevent their inclusion in such a group. The ratios shown for the Great Lakes studies may be affected by the higher illness incidence observed among the nonswimming South Beach group as compared with its northern counterpart.

The highest actual over-all incidence of illness of all types observed among the natural bathing water swimming groups, was 13.4 per 1,000 person-days (not shown in the tables) for South Beach swimmers who swam more than 24 days. Pool swimmers at Dayton, Ky., on the other hand, showed a much higher rise in over-all illness incidence, which reached 32 per 1,000 person-days for the group which swam 10–19 days. As will be shown in Table 4, this is due primarily to a higher incidence of eye, ear, nose, and throat ailments in this group which may be attributed to "diving" and bathing in closer prox-

TABLE 3

Ratio of Illness Incidence of Swimmers to Nonswimmers by Illness Type, Swimming Frequency, Water Quality, and Area Great Lakes Study—Chicago, Ill.

Group	Median Water Quality Coliform Organisms MPN per 100 ml.	Swimming Experience—Days			
		0	1–9	10–24	Over 24
		All Types of Illness			
North Beach	91	1.0	2.2	2.3	2.6
South Beach	190	1.0	1.4	1.5	1.2
		Nose and Throat Ailments			
North Beach	91	1.0	2.2	2.5	2.4
South Beach	190	1.0	1.4	1.3	1.2
		Gastrointestinal Disturbances			
North Beach	91	1.0	1.7	1.8	2.5
South Beach	190	1.0	0.9	1.0	0.7
		Other Types of Illness			
North Beach	91	1.0	2.4	2.4	3.1
South Beach	190	1.0	2.2	2.6	2.0

imity to one another in a body of water with a lower dilution factor.

In Table 4, over-all illness incidence rates are shown for various groups as related to gastrointestinal disturbances; eye, ear, nose, and throat ailments; and other illnesses reported. In the Chicago and Westchester County areas there was about twice as much illness of all types reported for the groups under 10 years of age as for those 10 years of age and over. For all the studies the incidence of gastrointestinal disturbances reported for the entire groups was less than 20 per cent of the incidence for all types of illness; that for eye, ear, nose, and throat ailments was somewhat more than half of the total.

With respect to specific swimming groups, it is significant to note that the pool swimmers had an incidence for all types of illness of 13.8 per 1,000 person-days. Eye, ear, nose, and throat ailments comprised 68 per cent of this incidence; gastrointestinal disturbances, 15 per cent; and other illnesses, the balance. River swimmers in the same population group under study, on the other hand, showed a lower total illness incidence rate with gastrointestinal disturbances representing 24 per cent of the total, and eye, ear, and respiratory ailments, only 53 per cent. These observations were given further analysis as will be shown later.

In the attempt to meet the third specific objective, namely, "to determine what differences in illness incidence might be expected from swimming in waters containing various degrees of bacterial pollution," an inspection of over-all illness incidence rates for the swimming groups was not fruitful and a more selective study was indicated. Consequently, days of relatively "high" and relatively "low" coliform densities were selected and analysis was made of the illness occurring among the swimmers on these days.

In Table 5 the illness incidence rates are shown for the week following swimming on selected days of relatively "high" and "low" coliform densities in the Great Lakes Study. The observed three-day incidence rate of 12.2 per 100 South Beach swimmers for illnesses occurring within a week subsequent to swimming is significant. It indicates that swimming in these waters containing a logarithmic average coliform density of 2,300 per 100 ml. may cause more illness than swimming in waters with the lower average densities shown. However, as will be shown, this finding was not borne out by the results of similar comparisons in other studies.

In the Ohio River and Tidal Water Studies, analysis was made of the over-all illness incidence one, two, and three days following swimming in waters of

TABLE 4

Over-All Illness Incidence Rates per 1,000 Person-Days

Study	Group	Types of Illness: All Types	Gastro-intestinal	Other Illnesses Reported: Nose and Throat	Skin	Eye, Ear and Other
Great Lakes	North Beach					
	Under 10 years	13.1	2.3	7.0	1.4	2.4
	10 years and over	5.9	1.2	3.2	0.5	0.9
	All Ages	7.1	1.4	3.9	0.6	1.2
	South Beach					
	Under 10 years	12.7	2.0	6.4	1.4	2.0
	10 years and over	7.1	1.4	3.8	0.5	1.5
	All Ages	8.3	1.5	4.3	0.7	1.8

Study	Group	All Types	Gastro-intestinal	Eye, Ear, Nose, and Throat	Other
Inland River and Pool	Entire group—All Ages	8.8	1.7	5.3	1.8
	* Nonswimmers	7.4	1.5	4.4	1.5
	* Pool Swimmers	13.8	2.1	9.4	2.3
	* River Swimmers	10.1	2.4	5.4	2.3
	* Total Pool and River Swimmers	12.1	2.3	7.5	2.3

Study	Group	All Types	Gastro-intestinal	Eye, Ear, Nose, and Throat	Other
Tidal Water	New Rochelle				
	Under 10 years	8.0	1.1	4.1	2.8
	10 years and over	4.3	0.6	2.6	1.1
	All Ages	5.3	0.8	3.0	1.5
	Mamaroneck				
	Under 10 years	10.7	1.3	6.2	3.2
	10 years and over	5.0	0.7	3.0	1.3
	All Ages	6.2	0.9	3.7	1.7

* Under 65 years of age

significantly different bacterial quality. The ranges of water quality for the Ohio River Study were: less than 1,400, 1,400–3,900, and greater than 3,900 coliform MPN per 100 ml., respectively. However, the number of swimmers on the selected days was small and did not permit a sensitive comparison to be made. No significant difference was observed between incidence of illness of all types following swimming on days of "greatest" pollution and "least" pollution. At Long Island Sound comparisons were made between illness incidences among swimmers in waters with coliform density of less than 190, 190–430, 430–1,250, and more than 1,250. Here, also, no significant difference was observed in the illness incidence rates among swimmers in the waters of different quality. It is interesting to note that the illness incidence among nonswimmers on the identical days reported for the swimming group in the latter study, was only from one-third to one-half of that shown for the swimmers.

In comparing the Ohio River Study data related to gastrointestinal disturbances, a second positive correlation was observed between bathing water quality and health. Although the comparative incidence of illnesses of all types was higher for pool swimmers than for river swimmers, an analysis of specific types of illness gives a different picture. Illness rates for all swimming groups combined, but specific for age and amount of swimming, were used to compute "expected" illnesses and to compare them with "observed" illnesses. This comparison showed that river swimmers had 32 per cent more gastro-

TABLE 5

Illness Incidence Rates Following Swimming on Selected Days of Significantly High and Low Coliform Density During Great Lakes Study

Groups	Number of Selected Days	* Mean Coliform Density on Selected Days MPN per 100 ml.	Number of Persons Swimming at Neighborhood Beach	Number of Swimmers Reporting Illness in Subsequent Week	3-day Illness Incidence Rate per 100 Swimmers
North Beach Swimmers	3 "high"	730	558	55	9.9
North Beach Swimmers	3 "low"	31	832	72	8.7
South Beach Swimmers	3 "high"	2,300	566	69	12.2
South Beach Swimmers	3 "low"	43	932	79	8.5

* Logarithmic average of results of all bacterial examinations

intestinal illness than might be expected on the basis of the experience of all groups combined.

Consistent as this may be with the hypothesis of more gastrointestinal illness for persons swimming in water with higher coliform densities, in this case 2,700 per 100 ml., the result must be treated with great caution because of the small number of cases involved. It roughly corresponds to a probability of 5 per cent that such a result could occur as an effect of chance. In any event, this observation cannot be explained away by a tendency of river swimmers to be less healthy in view of their relatively low over-all illness incidence.

SUMMARY AND CONCLUSIONS

The three studies have furnished valuable information on the swimming experience of individuals in various age groups and localities. They have demonstrated that an appreciably higher over-all illness incidence may be expected in the swimming group over that in the nonswimming group regardless of the bathing water quality. They have shown some 100 per cent higher illness incidence in the group under 10 years of age than for those over 10 years of age. They have shown that in studies of this type, eye, ear, nose, and throat ailments may be expected to represent more than half of the over-all illness incidence, gastrointestinal disturbances up to one-fifth, and skin irritations and other illnesses the balance.

Specific correlation between illness incidence and bathing in waters of a particular bacterial quality were observed in two instances. First in the Chicago Study, a comparison was made between swimmers on days when the bathing water quality was relatively "good" or "poor." A significant increase in illness incidence was observed among swimmers who used the South Beach on three selected days when the water had an average coliform content of 2,300 per 100 ml. The observation, based upon a significance test against the hypothesis that "high" pollution causes an increase in illness incidence, is one which could occur as a result of chance but once in 100 trials. This evidence should not be taken as conclusive, however. There were only three days on each side of the comparison and this did not permit a complete analysis of the effect that weather might have had on the result. But, it does provide a warning signal.

The second instance of positive correlation was observed in the Ohio River Study where it was shown that, despite the relatively low incidence of gastrointestinal disturbances, river swimming in water having a median coliform density of 2,700 per 100 ml. appears to

have caused a significant increase in such illnesses among these swimmers. Incidentally, the gastrointestinal illness rate for this group was substantially higher than that observed for any other group in any of the three studies.

Admitting the difficulties of conducting studies in which nature rather than man controls many of the variables, sufficient evidence is available to indicate that some of the strictest bacterial quality requirements for natural bathing water now existent might be relaxed without significant detrimental effect on the health of the bathers. This always has been and will continue to be a matter of judgment. It is hoped that the results of these studies will aid the administrators responsible for making these decisions.

ACKNOWLEDGMENT—The helpful suggestions and comments on this paper made by Theodore D. Woolsey, biostatistician, and Russell S. Smith, engineer, are very much appreciated.

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Protest Blue Cross Discrimination

The National Association for Mental Health recently adopted the following statement of policy with respect to discrimination against the mentally ill by Blue Cross, which statement was forwarded to Richard M. Jones, director, Blue Cross Plan for Hospital Care:

> The National Association for Mental Health is strongly opposed to those restrictions to hospital insurance coverage which discriminate against persons with mental illness. A study by A. E. Bennett shows that out of 115 cities having Blue Cross, 46 per cent totally exclude mental illness, 45 per cent impose special limitations of days, benefits or dollar maximum, and only 9 per cent provide regular benefits the same as other medical problems. This discrimination is based on the erroneous concept that all emotional and mental illness is chronic. This discrimination not only militates against the development of psychiatric services in general hospitals, but denies to psychiatric patients the benefits of such insurance. It deters their admission and often unduly limits the period of or denies coverage altogether. It constitutes pressure against correct psychiatric diagnosis. We, therefore, urge that insurance coverage be made available to such cases in general hospitals on the same basis as for other illnesses.

This statement is in line with the endorsement by the National Association for Mental Health of the establishment of psychiatric services and units in general hospitals. Hospitals so equipped are able to provide early and accurate diagnosis of mental illness and provide effective and early treatment for mentally sick persons. These facilities also offer means of training and education of the various health professions.

Cases of brucellosis have shown hypergylcemia and liver deficiency. Is there a relationship between this disease, diabetes and liver deficiency?

Brucellosis, Diabetes, and Liver Deficiency*

ALBERTO P. LEON, M.D., M.P.H., F.A.P.H.A., AND N. AGUIRRE

Institute of Public Health and Tropical Diseases, Mexico, D. F., Mexico

IN our frequent medical contact with cases of brucellosis, while conducting our research work, we observed an apparently significant high frequency of diabetes among cases of brucellosis. As we suspected the possible existence of a causal relationship between brucellosis and diabetes, we decided to investigate this point. At the beginning of the study it was found that liver deficiency was present in a large proportion of cases, and for this reason it was decided to investigate also the liver function in all cases of brucellosis with or without diabetes.

MATERIAL AND METHODS

The study was made on 150 cases of brucellosis, caused by *Brucella melitensis* as shown by the identification of the isolated Brucella or by the quantitative specific complement-fixation test, following the technic of León and Bernal (1950). As controls, there also were included in the study 36 cases of other infections (syphilis, streptococcus endocarditis, and amebiasis). In both groups, brucellosis and controls, the blood sugar test was done in fastness by the method of Folin-Wu. The sugar in the urine was determined by the method of Fehling. The liver function test used was that of Hanger, of flocculation of the cephalin-colesterol. This technic was selected because Popper, *et al.* (1949), have shown the closest relationship between the results of this test and the state of damage of the liver cells.

The definition of diabetes mellitus is usually given as an alteration of the metabolism of the carbohydrates with hyperglycemia and glycosuria. However, as the alteration of the metabolism of the carbohydrates and the hyperglycemia are the basic and most important features of this disease and the presence of glycosuria varies from one diabetic to another, in this paper we consider as diabetes, aside from the etymological meaning of the word, a condition with alteration of the metabolism of the carbohydrates with hyperglycemia, in which there might or might not be glycosuria.

RESULTS

It was found that out of 150 proven cases of brucellosis, caused by *Brucella melitensis*, 101 (67.7 per cent) had diabetes; while out of 36 cases of other infectious diseases (syphilis, streptococcus endocarditis, and amebiasis) only 5 (13.8 per cent) had hyperglycemia. Statistical analysis of these data by the chi-square test gives a value of 33.8, with a probability of 1–400 million that the association observed between brucellosis and diabetes could be due to chance.

Out of the 150 cases of brucellosis, 114 (76 per cent) had liver deficiency, and of these, 70 (61.4 per cent) had both diabetes and liver deficiency. Of

* Presented before the Epidemiology Section of the American Public Health Association at the Eightieth Annual Meeting in Cleveland, Ohio, October 21, 1952.

the 101 cases of brucellosis that had diabetes, 70 (69.1 per cent) also had liver deficiency. Statistical analysis of these data by the chi-square test gives a value of 7.6, with a probability of 6–1,000 that the association found between diabetes and liver deficiency in brucellosis could be due to chance.

Out of 36 cases of syphilis, amebiasis, and endocarditis, 18 (50 per cent) had liver deficiency; while out of 150 cases of brucellosis, 114 (76 per cent) had it, as indicated before. Statistical analysis of these data by the chi-square test gives a value of 9.5 in the association of brucellosis and liver deficiency, with a probability of 1.8–1,000 that this association could be due to chance.

DISCUSSION

Although there are several and complex factors in the metabolism of carbohydrates and therefore in the pathogenesis of diabetes, it is well known that frequently this malady occurs only, or principally, by lesions of the pancreas with deficient secretion of insulin, or by lesions of the liver with disturbance of its glycogenic and glycolytic functions. We know also that in brucellosis the occurrence of hepatitis with liver deficiency is frequent—in 76 per cent of our own cases. Reports of similar findings have been published recently by Spink, *et al.* (1948). In the relatively few autopsies that have been done in brucellosis, lesions of the liver have been reported as hepatitis, cirrhosis, atrophy, reticuloendothelial hyperplasia, etc. In the pancreas there have been observed hemorrhages, abcesses, chronic interstitial pancreatitis, etc., as mentioned by Harris (1950). Hardy, Jordan, Borsts, and Hardy mention the following post-mortem findings in the liver and pancreas of three autopsies: degeneration, fatty infiltration and passive congestion of the liver, and chronic interstitial pancreatitis. Bruce (1887) and Hughes (1897) had already reported changes in the liver and pancreas in some autopsies of brucellosis cases. Sharp (1934) mentions the tendency to necrosis and degeneration around the central vein and the central lobular necrosis of the liver. Rothenberg (1933) observed chronic interstitial pancreatitis with areas of infiltration, mainly of lymphocytes and some plasma cells, in a fatal case of undulant fever. Harris (*loc. cit.*) mentions the occasional occurrence of glycosuria and hyperglycemia, with 135 to 280 mgs. per cent glucose, in cases of brucellosis, with or without the symptoms of diabetes.

Our studies show that diabetes is very frequent in cases of brucellosis. Probably it is caused by the hepatitis with liver deficiency (in 69.1 per cent of our cases) or to insulin deficiency of the pancreas due to pancreatitis (29.9 per cent of our cases).

We have seen a better response to the treatment of brucellosis in cases that we have treated at the same time for diabetes and liver deficiency when present. Diabetes and liver deficiency have been reversible in the majority of the cases, disappearing as the cases recovered from brucellosis by treatment with antibiotics (chloramphenicol) active against Brucella and the simultaneous immunodesensitization, according to the method of León, *et al.* (1952). In the treatment of these cases it has been necessary to use frequently the lipotrophics in cases with liver deficiency and insulin in some of the cases with diabetes.

CONCLUSIONS

The results of our studies point in the direction of three conclusions: (1) Brucellosis is a cause of diabetes and liver deficiency; (2) diabetes and liver deficiency are frequent complications of brucellosis, and (3) in cases of brucellosis it is necessary to make a careful search for diabetes and liver deficiency

for their proper treatment, and in cases of diabetes and liver deficiency to search for brucellosis as the probable cause and for its proper treatment.

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Plan for Distributing Gamma Globulin

The Office of Defense Mobilization, Washington, D. C., announced on March 12 a pattern for the distribution in 1953 of gamma globulin from the limited supplies available.

It is estimated that between six and seven million cc. of gamma globulin will be available for protection against poliomyelitis during 1953, exclusive of that required for measles and infectious hepatitis. On or about May 1 the Office of Defense Mobilization will authorize shipments to state health officers on request in accordance with the following formula:

A. An initial allotment of gamma globulin will be determined and furnished each state, the amount to be calculated on the basis of 40 cc. times the median number of reported cases of polio for the five year period 1947–1951. Consideration will be given to requests from state health officers for supplies over and above this initial allotment when the reported incidence of polio in 1953 appears to exceed that indicated by the five year median. The material may be used for intimate contacts of clinically diagnosed cases.

B. The remaining major portion from the potentially available supply of gamma globulin will be reserved in a national pool for use in epidemic or emergency situations. The definitions and criteria necessary to determine the existence of such emergency or epidemic areas are to be developed by the National Research Council's allocation panel and/or other experts selected for this purpose. A more detailed plan for distribution and use of the material in short supply is in preparation.

First a clear-cut plan for the follow-up of polio cases was agreed to by the medical, nursing and other public health people involved. Then the program was put into effect and carried out for a year or two. Following that, the experience was examined to discover how the plan might be modified to make the work more effective. This is a sequence of activities that will commend itself to all.

A Study of Follow-Up of Poliomyelitis Patients*

HELEN M. WALLACE, M.D., M.P.H., F.A.P.H.A., PATRICIA HEELY, R.N., MARGARET A. LOSTY, R.N., AND HERBERT RICH

Director, Bureau for Handicapped Children and Director, Bureau of Nursing, New York City Department of Health; Director of Nursing Service, National Foundation for Infantile Paralysis; and Senior Statistician, New York City Department of Health, New York, N. Y.

UNDOUBTEDLY the two most important issues confronting administrators of public health programs are the provision of services of the highest quality for people, and to make the maximum and the most effective use of the available professional personnel. Unless we solve these issues which are mutually interdependent, society will not continue for long to support public health programs.

To attain these goals, there are several steps necessary. The first step is the collection of the clinical facts upon which to base a sound program. In some programs the necessary clinical facts are readily available to us. In other programs, such data may not be at hand, and programs then have to be developed on a somewhat empirical basis using the best clinical opinion available. A second step of equal importance is the periodic evaluation of the program, once it is under way, to determine whether the objectives as originally set up are being reached, or whether modification and revision are necessary.

Public health programs in many communities include some type of long-term follow-up of patients with poliomyelitis. Because of the lack of data regarding the results of such long-term follow-up, most of these programs have been set up empirically. Some official health agencies have provided orthopedic clinics for long-term medical supervision, or home visiting by public health nurses for long-term nursing supervision, or a combination of both. The length of such long-term supervision has varied. The supervision may be continued until the patient reaches his twenty-first birthday, or until the period of growth, however that is defined, has ceased, or for an arbitrary period of time.

In New York City in the middle

* Presented before the Maternal and Child Health Section of the American Public Health Association at the Eightieth Annual Meeting in Cleveland, Ohio, October 24, 1952.

1940's a plan was set up for supervision of poliomyelitis patients for a 2-year period through home visiting by public health nurses. This plan called for the following schedule of home visits: the first visit within one week after onset of the illness; the second at the end of one month after onset of the illness; and subsequent visits quarterly thereafter for the remainder of the 2-year period. In this plan no distinction in policy for visiting was made between the various types of poliomyelitis and the degree of involvement of poliomyelitis patients. This plan represented an agreement of opinions of medical leaders in the field, members of the Health Department, and the voluntary nursing agencies. This report will present an analysis of the care given to poliomyelitis patients during the period of follow-up based on a study of patients reported to have had poliomyelitis in this city in 1949.

CASES STUDIED AND METHOD OF STUDY

During 1949 there were 2,446 cases of poliomyelitis reported in New York City, of whom 181 (7.4 per cent) died. Of the remaining 2,265, 137 were excluded from this study because they moved out of the city or could not be located within the city. This study consists of an analysis of 1,523 of the remaining 2,128 cases. Of the 1,523 patients studied, 616 (40.5 per cent) were nonparalytic, 252 (16.5 per cent) were bulbar or bulbospinal paralytic, and 655 (43.0 per cent) were nonbulbar paralytic. This classification of patients is based on findings of a home or hospital visit to the patient made by a diagnostician of the Health Department's Bureau of Preventable Disease generally 24–48 hours after the case was reported to the Health Department, and correlated with the findings of the attending physician and hospital staff.

The group of patients included in this study do not represent the same proportions of patients in the total group of 2,128 (the sample includes 89 per cent of the nonparalytic, 78 per cent of the bulbar and 59 per cent of the other paralytic). However, the conclusions would not be changed materially if the correct weights were assigned to each type of patient in the sample.

The method of study consisted of a review of 2 sources of records: (1) the public health nursing record describing home visits over the 2-year follow-up period; (2) corresponding school placement records in the Bureau for Handicapped Children.

STUDY OF NURSING SUPERVISION

Agencies Visiting

Of the 1,523 patients studied, 1,292 (84.8 per cent) were visited by Health Department nurses only, and 231 (15.2 per cent) by a combination of Health Department and voluntary agency nurses. Of the 3 types of patients, the percentage visited by 2 or more nursing agencies (official and voluntary) at different times varied from 5.4 per cent in the nonparalytic group; 15.1 per cent in the bulbar paralytic group, and 24.4 per cent in the other paralytic group (Table 1). If we assume that the voluntary agencies with their emphasis on bedside care and treatment would make their best contribution for patients with paralysis, then the selection of patients referred to the voluntary agencies is good.

Number of Visits

A total of 12,437 visits was made to the patients visited by Health Department nurses only, or an average of 9.8 visits per patient. The average number of visits per patient was approximately the same for the nonparalytic, bulbar paralytic, and other paralytic types of patients (Table 1). Since the Health Department nursing record did not contain data on the number of visits made by the voluntary nursing agencies, we have not been able to calculate the

TABLE 1

Nursing Supervision by Type of Patient

Type of Patient	Cases Visited: Total	By Health Department Nurses Only	By Health Dept. and Voluntary Agency Nurses	Percentage Distribution: Total	By Health Department Nurses Only	By Health Dept. and Voluntary Agency Nurses	Visits by Health Department Nurses: Total Visits	Average per Case
Nonparalytic	616	583	33	100.0	94.6	5.4	5,674	9.7
Bulbar paralytic	252	214	38	100.0	84.9	15.1	2,062*	10.0*
Other paralytic	655	495	160	100.0	75.6	24.4	4,701†	9.8†
Totals	1,523	1,292	231	100.0	84.8	15.2	12,437‡	9.8‡

* Number of visits to 8 patients unknown. Average per case based on the remaining 206 patients.

† Number of visits to 15 patients unknown. Average per case based on the remaining 480 patients.

‡ See above footnotes.

TABLE 2

Visits by Health Department Nurses by Type of Patient by Status at Three Months

	Bulbar Patients: Total Number	Status at 3 Months: Had Paralysis	Had No Paralysis	Unknown	Other Paralytic Patients: Total Number	Status at 3 Months: Had Paralysis	Had No Paralysis	Unknown
Total patients	252	112	137	3	655	419	228	8
Total number visited by health department nurses only	206*	80	125	1	480†	279	199	2
Total number visits by health department nurses only	2,062*	767	1,281	14	4,701†	2,643	2,045	13
Average number visits per case made by health department nurses	10.0*	9.6	10.2	14.0	9.8†	9.5	10.3	6.5

* Does not include 8 patients where number of visits unknown

† Does not include 15 patients where number of visits unknown

average number of visits made on patients visited by other agencies than the Health Department.

A further analysis of visits was made by correlating the number of visits by Health Department nurses with data on the patients' status 3 months after onset of the illness. The analysis indicates that the patients who showed a paralysis at 3 months after onset had the same number of home visits by Health Department nurses for the period of follow-up as patients who had no paralysis at that time (Table 2). This, of course, followed the policy established for the program.

Length of Nursing Supervision

Logically, it would be expected that the available public health nursing time should be directed toward those patients who need it most. However, statistical analysis indicates that there were no significant differences among the averages of the length of public health nursing supervision. These averages were:

	Months
Nonparalytic	25.5
Bulbar (total)	25.0
Bulbar (paralysis at 3 months)	25.6
Bulbar (no paralysis at 3 months)	24.6
Other paralytic (total)	25.2
Other paralytic (paralysis at 3 months)	25.4
Other paralytic (no paralysis at 3 months)	25.1

All variances were of the order of 16 and thus, even at a 5 per cent level, no significant difference is indicated.

This again was according to the established policy. Although after a year's follow-up, there was question of the need for continuing, it was agreed to adhere to the original plan for the 1949 cases.

Of the 907 paralytic patients, 291 (32 per cent) continued to be visited by Health Department nurses after the physician medically discharged the patient. A total of 1,224 visits (9.8 per cent of total visits) was made by Health Department nurses to this group of 291 patients after they were medically discharged, or an average of 4.2 visits per patient.

For the nonparalytic group of patients, these figures would run much higher, because they were medically discharged earlier and home visiting continued.

Of 347 nonparalytic patients between the ages of 6–16 years, the school age group, only 165 (47.6 per cent) had been seen at some time during the 2-year period by a school physician or public health nurse in the schools. Thus an additional 52 per cent of this age group might have had supervision through the school health service, an already existing service, rather than by home visiting. The school physician or nurse, or both, saw this group of 165 children 409 times, or an average of 2.5 times per patient, in contrast to a general average of 10 home visits made per patient.

Another problem revealed by the review of records was the fact that frequent visits were made to the home, while the patients were in the hospital. Although the total number of such visits was not tabulated, the homes of 32 of the 907 paralytic patients (3.5 per cent) were visited by public health nurses 5 or more times while the patients were in the hospital. The total number of such wasted home visits was 226. The highest number of such wasted visits to any one home was 12.

Another type of wasted home visit is the case of the student attending school away from home. Two examples will portray this problem. One home was visited 8 times in 25 months while the patient, who was never seen, was attending the Harvard Law School. Another home was visited 9 times in 27 months while the patient was attending college in Oklahoma.

DEVELOPMENT OF SUBSEQUENT PARALYSIS

Of the 1,523 patients, 67 or 4.4 per cent developed a subsequent or new paralysis after hospital discharge and during the period of nursing supervision (Table 3). The percentage varied from 5.8 per cent in the nonparalytic group to 3.3 per cent in the nonbulbar paralytic group. The nonparalytic group of patients had a statistically significant higher incidence of subsequent paralysis than the bulbar and other paralytic groups of patients, when the latter two groups are combined. There is one possible explanation for this difference: namely, that a patient diagnosed as nonparalytic within 24–48 hours after the case was reported to the Health Department might have subsequently developed paralysis in the hospital during the acute stage of illness, or shortly after hospital discharge. There is some evidence to support the latter explanation—the fact that 16 or almost one-half of the nonparalytic patients developing subsequent paralysis did so within 3 months after onset. The time

TABLE 3

Patients Developing Subsequent Paralysis by Age at Onset and Type of Case

Age Group Year	All Patients			Nonparalytic			Bulbar Paralytic			Other Paralytic		
	Total Number	Developed Paralysis		Total Number	Developed Paralysis		Total Number	Developed Paralysis		Total Number	Developed Paralysis	
		No.	Per cent		No.	Per cent		No.	Per cent		No.	Per cent
Under 1	16	..	..	4	..	..	1	..	..	11	..	..
1– 4	364	11	3	123	8	7	46	..	..	195	3	2
5– 9	529	28	5	237	11	5	98	4	4	194	13	7
10–14	281	17	6	137	9	7	56	5	9	88	3	4
15–19	129	4	3	45	3	6	24	..	..	60	1	2
20–24	78	4	5	32	3	9	14	..	..	32	1	3
25 and over	126	3	2	38	2	5	13	..	..	75	1	1
Total	1,523	67	4.4	616	36	5.8	252	9	3.6	655	22	3.3

these 16 nonparalytic patients developed subsequent paralysis is as follows:

Weeks After Onset	Patients
2	4
3	3
4	4
6	5

Most of these patients did not have the presence of paralysis noted on their hospital discharge medical summary. It is possible that some of these 16 patients might have had some muscle weakness during the period of hospital stay which might not have been found. If this explanation is correct, the need for more careful examination of this group of patients prior to hospital discharge is apparent.

The age distribution of patients developing subsequent paralysis shows little of significance (Table 3).

Of the 67 patients subsequently developing paralysis, 38 (57 per cent) did so within one year after onset. In the nonparalytic group of 36 patients 16, or almost half, did so within 3 months after onset. In the bulbar paralytic and other paralytic groups, approximately one-third of the patients did so within one year after onset (Table 4).

Of the 67 patients subsequently developing paralysis, all but 2 patients were under continuous medical supervision at the time the subsequent paralysis was found. In one of these 2 patients, who had had bulbar poliomyelitis and had been under the care of a general practitioner and a hospital with an approved orthopedic residency for 11 months, a facial paralysis was found 23 months after onset. The second patient, who had had an original paralysis of the leg and had been under the care of a hospital with an approved orthopedic residency for an unknown period of time, showed a possible scoliosis at 24 months after onset of illness.

Of the 67 patients subsequently developing paralysis, 46 of them had been under the care of a hospital with an ap-

TABLE 4

Time Subsequent Paralysis Developed

Time	Total	Nonparalytic	Bulbar Paralytic	Other Paralytic
Months				
Under 3	16	16	..	..
3– 5	10	8	1	1
6– 8	9	4	..	5
9–11	3	..	1	2
12–14	8	2	1	5
15–17	2	..	1	1
18–20	4	3	..	1
21–23	4	1	1	2
24–26	5	..	2	3
27–29	..	..	..	..
30–32	2	1	..	1
Miscellaneous	1*	1*	..	..
Unknown	2	..	2	..
Total	67	36	9	22

* Showed paralysis of arm and leg at 3 weeks after onset, and scoliosis at 5 months after onset

TABLE 5

Type of Paralysis Subsequently Developing

Type of Paralysis	*Total*	*Nonparalytic*	*Bulbar Paralytic*	*Other Paralytic*
Scoliosis	30	6	7	17
Lower extremity	21	20	..	1
Possible scoliosis	8	4	1	3
Upper extremity	3	2	1	..
Abdomen, trunk, or both	2	2	..	..
Facial	1	..	..	1
Arm, leg, abdomen, muscles	1	1	..	..
Arm, leg, scoliosis	1	1	..	..
Total	67	36	9	22

proved orthopedic residency, 7 under the care of an orthopedist, 3 under the care of a pediatrician, 6 under the care of a general practitioner, one under the care of a physiatrist, 2 under the care of an approved hospital and general practitioner, and one under the care of a radiologist and general practitioner. Thus, 90 per cent of the patients who subsequently developed paralysis were under the care of a hospital with an approved orthopedic residency, an orthopedist, a pediatrician, or a physiatrist.

Of the 67 patients subsequently developing paralysis, 31 or almost half developed scoliosis, and 23 or one-third developed paralysis of the lower extremity. If a subsequent paralysis develops, the nonparalytic group was more likely to develop a paralysis of the lower extremity; the paralytic groups to develop scoliosis (Table 5).

Of the 31 patients in the bulbar and other paralytic groups who developed a subsequent paralysis, all but 7 patients demonstrated some paralytic condition at a period 3 months after onset of their illness; 5 had no paralysis at that time, and in 2 patients, there was no information. The site of paralysis at 3 months after onset of illness gave no clue as to

TABLE 6

Type of Medical Supervision of Bulbar and Other Paralytic Patients

Type of Supervision	*Total No. Patients*	*Per cent of Total*	*Total Not Under Approved Supervision*	*Per cent Not Under Approved Supervision*
1. Hospital	496	54.7	20	4.0
2. Private medical	307	33.9	152*	49.5
3. Combined hospital and medical	53	5.8	2	3.8
4. Other	11‡	1.2	3†	27.3
5. No supervision	21	2.3	21	100.0
6. Unknown	19	2.1	..	..
	907	100.0	198	21.8

Definitions

1. Approved hospital—approved by AMA for residency training in orthopedics, physical medicine, or ophthalmology
2. Approved private medical—a physician who is a diplomate of the American Boards of orthopedics, physical medicine, or pediatrics, or a physician who is an associate attending or better in a voluntary or municipal hospital

* Includes the following: general practitioners (118); obstetricians, both qualified and unqualified (16); surgeons, both qualified and unqualified (11); and unqualified pediatricians (8); internists (1); orthopedists (2); and various combinations of unqualified physicians.

† Includes 1 osteopath and 2 chiropractors

‡ Includes school health service only, child health station only, osteopath, chiropractors, and 5 patients still in hospital.

TABLE 7

Type of Medical Supervision of Bulbar and Other Paralytic Patients Showing Paralysis at Three Months After Onset

Type of Supervision	Total No. of Patients Showing Paralysis at 3 Months after Onset	Those Not Under Approved Supervision	Per cent Not Under Approved Supervision
Hospital	345	13	3.8
Private medical	129	47	36.4
Combined hospital and medical	32	2	6.3
Other	6	1	16.7
No supervision	8	8	100.0
Unknown	11	..	..
Totals	531	71	13.4

which patients might subsequently develop additional paralysis, the diagnoses in the 24 patients being widely scattered.

MEDICAL STATUS AND SUPERVISION

Of the 907 paralytic patients, 309 (34 per cent) showed at 3 months after onset of illness involvement of only a lower extremity; 56 (6 per cent) of only the head or neck, or both; 52 (6 per cent) of only the upper extremity; 8 (1 per cent) of only the abdomen or trunk, or both; and 365 (40 per cent) showed no involvement at 3 months after onset of illness.

Fifty-four per cent of the bulbar cases showed no involvement at 3 months after onset of illness, in contrast to 35 per cent of the other paralytic group. As would be expected, the bulbar group showed a higher percentage of involvement of the head or neck, or both, (20 per cent) and the other paralytic group a higher percentage of involvement of the lower extremity (55 per cent).

Of the 907 paralytic patients, 496 (55 per cent) were under care of a hospital, 307 patients (34 per cent) under care of a private physician, 53 patients (6 per cent) under mixed supervision; 21 patients (2 per cent) were under no medical supervision. All but 4 per cent of the 496 patients under hospital supervision were under the care of a hospital approved by the Council on Medical Education of the American Medical Association for residency training in orthopedic surgery, physical medicine and rehabilitation, or ophthalmology. In contrast, approximately one-half of the patients under private medical supervision were not cared for by a qualified orthopedist, physiatrist, pediatrician, or internist (Table 6). This general pattern was even evidenced in patients who showed some type of paralysis at 3 months after the onset of their illness (Table 7).

Of the 1,486 patients concerning whom data were available, 1,228 (82.6 per cent) had no paralysis at the time the nursing supervision was terminated. The prevalence of "no paralysis" ranged from 99.2 per cent in the nonparalytic group, to 83.5 per cent in the bulbar paralytic group, to 66.0 per cent in the other paralytic group (Chart 1).

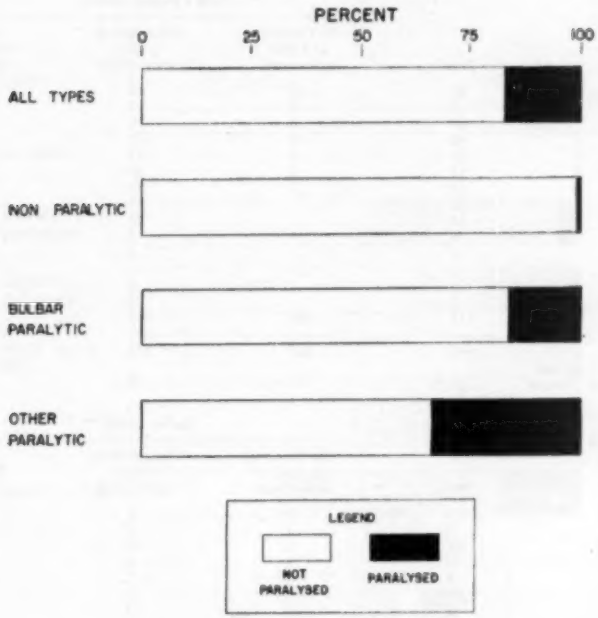
The patients' condition at the termination of nursing supervision was correlated further with their condition at 3 months after onset of their illness. The highest percentage having paralysis at termination belonged to the mixed type of paralysis, with the sites of abdominal or trunk, or both, and of lower extremity running next in frequency Chart 2).

PHYSICAL THERAPY

Of the 907 patients in the bulbar and other paralytic groups, 42.1 per cent received physical therapy at some time

CHART 1

Status of Paralysis by Type of Case at Termination of Nursing Supervision



following hospital discharge. The percentage in the bulbar group (31 per cent) was much less than that in the other paralytic group (46 per cent). Approximately one-fifth of the paralytic patients who had no paralysis 3 months after onset of their illness received physical therapy, in contrast to three-fifths of the patients who showed paralysis at 3 months after onset of illness (Table 8).

The average duration of physical therapy for the bulbar paralytic group who received physical therapy was 10.1 months, and for the other paralytic group 13.2 months. Statistically these durations are not significantly different. In both the bulbar paralytic and other paralytic groups, the duration of physical therapy for those patients who had no paralysis at 3 months after onset of illness was significantly less than for those who had paralysis at that time:

	Months
Bulbar Paralytic Group	
No paralysis at 3 months after onset	7.9
Paralysis at 3 months after onset	11.3
Other Paralytic Group	
No paralysis at 3 months after onset	6.2
Paralysis at 3 months after onset	13.3

On the other hand, of the 71 patients who had no paralysis at 3 months after onset of illness and who received physical therapy, all but 24 received physical therapy for more than 3 months. The longest duration of physical therapy in this group was 27–29 months.

TABLE 8

Duration of Physical Therapy in Paralytic Groups

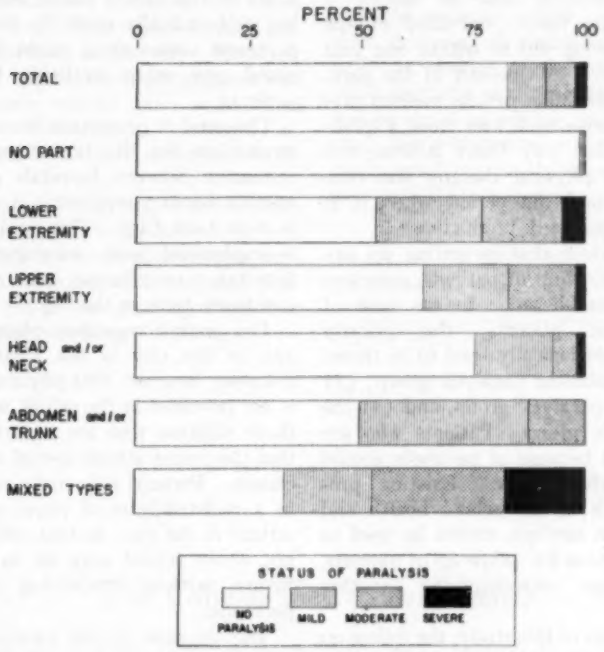
Duration of Physical Therapy Months	Total	Total Paralytic Group		
		No Paralysis at 3 Mos. after Onset	Paralyzed at 3 Mos. after Onset	Status Unknown at 3 Mos.
Under 3	46	24	21	1
3– 5	38	8	30	..
6– 8	67	18	49	..
9–11	55	8	47	..
12–14	50	6	43	1
15–17	35	5	30	..
18–20	33	1	32	..
21–23	25	..	25	..
24–26	22	..	22	..
27–29	6	1	5	..
30–32	4	..	4	..
33–35	..	..	..	..
36–38	1	..	1	..
Unknown	7	..	7	..
None	518	294	215	9
Totals	907	365	531	11
Per cent receiving physical therapy	42.1	19.5	58.2	18.2

Duration of Physical Therapy Months	Total	Bulbar Group		
		No Paralysis at 3 Mos. after Onset	Paralyzed at 3 Mos. after Onset	Status Unknown at 3 Mos.
Under 3	13	5	7	1
3– 5	7	2	5	..
6– 8	22	8	14	..
9–11	9	3	6	..
12–14	9	3	5	1
15–17	8	3	5	..
18–20	3	..	3	..
21–23	2	..	2	..
24–26	3	..	3	..
27–29	2	..	2	..
30–32	1	..	1	..
Unknown	1	..	1	..
None	172	113	58	1
Totals	252	137	112	3
Per cent receiving physical therapy	31.3	17.5	47.3	66.7

Duration of Physical Therapy Months	Total	Other Paralytic Group		
		No Paralysis at 3 Mos. after Onset	Paralyzed at 3 Mos. after Onset	Status Unknown at 3 Mos.
Under 3	33	19	14	..
3– 5	31	6	25	..
6– 8	45	10	35	..
9–11	46	5	41	..
12–14	41	3	38	..
15–17	27	2	25	..
18–20	30	1	29	..
21–23	23	..	23	..
24–26	19	..	19	..
27–29	4	1	3	..
30–32	3	..	3	..
33–35	..	..	..	..
36–38	1	..	1	..
Unknown	6	..	6	..
None	346	181	157	8
Totals	655	228	419	8
Per cent receiving physical therapy	46.3	20.6	61.1	0.0

CHART 2

Status of Paralysis at Termination of Nursing Supervision by Part of Body Paralyzed Three Months after Onset



Of the 309 patients with paralysis at 3 months after onset of illness who received physical therapy, 162 received physical therapy for 12 months or longer, and 89 received physical therapy for 18 months or longer. These facts should be correlated with the recommendation of a medical advisory committee in the city that, except for unusual circumstances, physical therapy is usually not necessary and not productive after a period of one year as shown in Table 8.

DISCUSSION

The above facts may be summarized as follows: (1) The same amount of home nursing supervision was given to the nonparalytic, and the bulbar and other paralytic types of patients. (2) The same amount of home nursing supervision for the period of follow-up was given to all patients regardless of their medical status at 3 months after onset of illness. (3) Twelve hundred or 10 per cent of the home visits were made after the patient had been discharged medically. (4) Fifty-two per cent of the nonparalytic school age children who might have been followed through the school health services were not seen by that service. (5) Other examples of wasted home visits were the multiple visits made while the patient was hospitalized or away at school. (6) Only 4 per cent of the patients developed a subsequent or new paralysis; almost all of these patients were under con-

tinuous and competent medical care when they did so. (7) One-half of the nonparalytic group who developed subsequent paralysis did so within 3 months after onset; one-third of the paralytic group did so within one year after onset. (8) One-half of the paralytic patients under private medical care did not receive such care from a qualified specialist. (9) There is some evidence that physical therapy was continued beyond the period when it is usually considered productive.

It is obvious that in setting up any plan for follow-up of patients, priorities must be established. In the case of poliomyelitis patients, the priority groups would logically seem to be these: (1) the nonbulbar paralytic group; (2) the bulbar paralytic group, and (3) the nonparalytic group. Patients who are homebound because of paralysis should receive high priority. Existing programs, such as the school health and child health services, should be used to their maximum for follow-up of patients, rather than superimposing another service.

As a result of this study, the follow-up program analyzed above has been revised. In the revised plan, a general guide [1] for visiting has been set up. The exact number and frequency of home visits to poliomyelitis patients by public health nurses will be determined by the needs of the individual patient and his family. The decision regarding the number and frequency of visits is to be made by the public health nurse in consultation with the patient's physician. She may call upon her supervisor and consultants in the field for guidance. The revised plan includes the establishment of priorities as listed above, and includes the principles of the use of the existing school health and child health services. It is recommended that nonparalytic patients generally be visited for a 3-month period, and paralytic patients for a one-year period. Had the data obtained through this study been available in 1949, and the follow-up plan revised accordingly, approximately 8,350 of the 12,437 public health nursing visits actually made by Health Department nurses alone might have been saved and made available for other patients.

The need to promote a more effective mechanism for the interchange of information between hospitals and community nursing services is a great one in New York City. This need has been re-emphasized with administrators of hospitals, convalescent, and rehabilitation institutions in the city.

The picture regarding physical therapy in the city is not clear-cut. It is known, however, that physical therapy is not provided in the public schools for those children who are so handicapped that they must attend special orthopedic classes. Perhaps this study may result in a redistribution of physical therapy service in the city, so that children now not easily served may be in the near future, without employing additional personnel.

The question of the means of channeling patients with paralysis to qualified specialists is not an easy one to solve. The inclusion of such specialists on the panel of physicians providing the diagnostic and consultant services in the beginning home care program in the city may be an easy first step, especially since this program is being developed cooperatively with the county medical societies.

In the analysis presented, it might be assumed that an approved hospital, as defined, automatically assures medical care of a high caliber. However, surveys made of approximately one-quarter of the hospitals do not bear this out completely.

This study clearly demonstrates the importance of evaluation of any established program. As a result of this study, leads were obtained which were of

great assistance in the revision of the plan for long-term follow-up of poliomyelitis patients. The revised plan should result in a better and more effective use of the professional personnel available in the city. However, it should not be taken for granted that this recently revised plan is the final answer. Undoubtedly, periodic reevaluations will result in further modifications.

This type of analysis obviously may be applied to any other service or program which is concerned with long-term follow-up. Currently, it is being similarly applied in the follow-up of children with cardiac handicaps in the city.

SUMMARY

This report presents an evaluation of a plan for long-term follow-up of poliomyelitis patients. The data derived from this analysis clearly indicated the need for revision of the plan and provided leads for modifications. Assistance was obtained in setting up priorities so that proportionately more service is made available to those patients who may benefit from it most.

REFERENCE

1. Bureau for Handicapped Children. Plan for Supervision of Poliomyelitis Patients in New York City. New York: New York City Department of Health (July), 1952. 10 pp.

The Official Geriatrics Journal

The 10-year old American Geratrics Society has expanded to such an extent that an official publication is now possible to document the rapid developments in the field of geriatrics. The first issue of the monthly *Journal of the American Geriatrics Society* appeared in January, 1953. Here is given a brief history of the society, together with a brief resumé of each of the nine annual meetings.

Aside from technical articles on various aspects of the aging process, current geriatric literature is also reviewed. Editor of the *Journal* is Willard O. Thompson, M.D., to whom all manuscripts should be submitted. Suite 414, 700 North Michigan Avenue, Chicago 11.

The Williams and Wilkins Company is the publisher to whom subscriptions should be sent. Mt. Royal and Guilford Avenues, Baltimore 2. $10 to nonmembers. Members' subscriptions are included in annual dues.

It has been known for some time that ionizing radiations can kill microorganisms. Discussed here are some of the problems involved in the practical application of this principle to the preservation of foods and human tissues, and the sterilization of antibiotics, water and sewage.

Public Health Aspects of Electronic Food Sterilization*†

JOHN T. R. NICKERSON, PH.D., BERNARD E. PROCTOR, PH.D., F.A.P.H.A., AND SAMUEL A. GOLDBLITH, PH.D.

Department of Food Technology, Massachusetts Institute of Technology, Cambridge, Mass.

ALMOST since the discovery of radium, man has been interested in the destructive effects of radioactive emanations on microorganisms. Early investigators in the field included Pacinotti and Porcelli,[4] Prescott,[5] and many others.[7, 8]

Although the bactericidal action of ionizing radiations has been known for a number of years, intense research leading to its industrial application was not started until 1945.

When particle accelerators were developed in the 1930's, a major source of controllable radiation energy was made available. The possibilities of utilizing such energy for "cold sterilization" of foods was realized soon afterwards, and in 1943 studies were started in the Food Technology Laboratories of the Massachusetts Institute of Technology to determine whether foods containing viable bacteria could be sterilized by high energy x-rays produced with an air-insulated Van de Graaff accelerator.[10] It was found that sterilization of highly contaminated foods could be brought about by these radiations.

Immediately following the second World War, the Samuel Cate Prescott Laboratories of Food Technology at the Massachusetts Institute of Technology instituted an intensive research program dealing with the cold sterilization of foods, drugs, biologicals, tissues, milk, water, and sewage by means of high energy radiations. In the first phase of this research, high energy x-rays were used (2 to 3 Mev). The penetration of these radiations into matter is exponential and relatively great, but the efficiency of conversion of the primary electron beam (or cathode ray beam) is very small, in the order of only 3 to 5 per cent. The remainder of the energy is converted to heat in the target. Hence, in practical terms, relatively long periods of time are required to bring about sterilization by means of x-rays produced in a particle accelerator.

If the primary electron beam (namely, cathode rays) is used as the ionizing agent, there is a much better efficiency of utilization of energy, approaching 75 per cent. However, the penetration of cathode rays into matter is finite and considerably less than with x-rays. The penetration of cathode rays is approximately one centimeter for each two million volts of energy.

Particle accelerators are now being developed that are capable of reaching

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* Presented before a Joint Session of the Food and Nutrition and Laboratory Sections of the American Public Health Association at the Eightieth Annual Meeting in Cleveland, Ohio, October 22, 1952.

† Contribution No. 141 from the Department of Food Technology, Massachusetts Institute of Technology, Cambridge, Mass.

higher energy levels, and because the efficiency of utilization of cathode rays is relatively great, sterilization can be accomplished by this means in a matter of seconds or fractions thereof.

A great amount of attention is being given at the present time to the possible utilization of waste fission products as a source of ionizing radiations. The importance of the utilization of such fission products is concerned with the source of the energy and not with the type of radiation.

MODE OF ACTION OF IONIZING RADIATIONS ON BACTERIA

It is believed that the bactericidal effect of ionizing radiations is due to the direct hit of a particle through a cell wall or very near to it. This hit causes ionization in the bacterial cell, leading to its inability to reproduce.

The destruction of microorganisms by cathode rays follows a first order reaction:

$$n = n_0 e^{-D/D_0}$$

Where n/n_0 is the fraction of organisms surviving a dose D, D_0 is the "37 per cent dose" or quantity of radiation that results in 37 per cent survival (e^{-1}), and e is the natural logarithm.

Typical survival curves of microorganisms exposed to ionizing radiations are presented in Figure 1. It can be observed from this figure that certain organisms are more resistant than others to irradiation with ionizing radiations. Spore-forming bacteria are more resistant than nonspore-forming types. Mold spores are less resistant than bacterial spores.

In general, the lower the order in the plant and animal kingdoms, the greater the resistance of the microorganisms to cathode rays. This is illustrated in Figure 2.

The potentialities of ionizing radiations as a means of cold sterilization may be classified under the following headings:

1. Complete sterilization and surface sterilization of foods
2. Pasteurization of milk
3. Sterilization of water
4. Destruction of insects in all stages
5. Destruction of Trichinae
6. Sterilization of drugs and biologicals
7. Sterilization of blood
8. Sterilization of human organs for subsequent transplants

It is impossible in the space allotted to cover all aspects of each of the above

FIGURE 1

The Effect of 50 Kilovolt Roentgen Rays on Bacteria

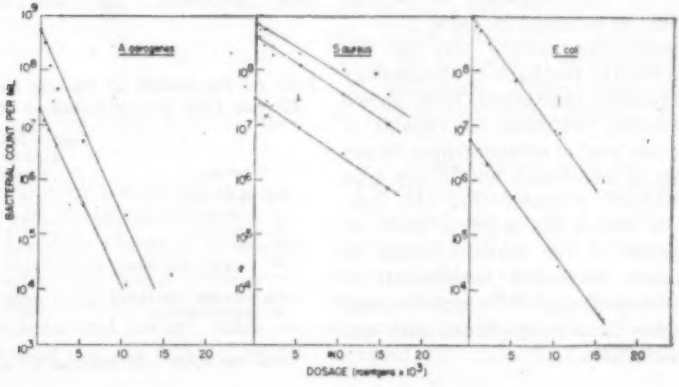
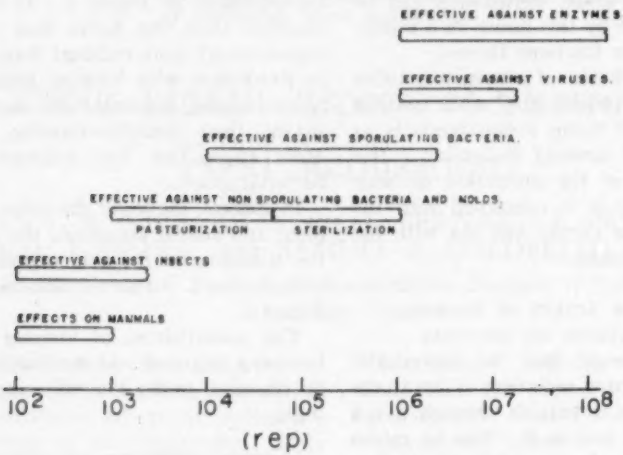


FIGURE 2

Dose Levels of Ionizing Radiation Required for Various Biological Effects



topics. However, an attempt will be made to deal with the most significant aspects.

STERILIZATION OF FOODS AND FOOD SURFACES

In the sterilization of foods with ionizing radiations the species of microorganism has been found to be of far greater importance than the number of microorganisms. For instance, *Bacillus thermoacidurans* is much more resistant to ionizing radiations than *Escherichia coli*. The relative resistance of certain species of microorganisms to ionizing radiations is indicated in Table 1.

Investigations carried out at the Massachusetts Institute of Technology and at other institutions have shown that ionizing radiations are capable of killing any kind of microorganism in any medium or menstruum and in any type of container, provided that this container is within the practical limits of penetration of the particular type of radiation. Successful sterilization of meat, fish products,[8, 6, 9] vegetables, and spices has been accomplished with ionizing radiations.

A number of problems associated with the sterilizing of foods by radiations have yet to be solved. These will be covered later in this paper.

Organisms causing food infections and food intoxications are of interest in respect to the pasteurization and sterilization of foods. Recent investigations with three species of Salmonella organisms, *S. paratyphi*, *S. senftenberg*, and *S. typhimurium*, indicate that when they are inoculated into liquefied whole eggs, *S. typhimurium* is most resistant and *S. paratyphi* least resistant to ionizing radiations. All three of these

TABLE 1

Time for Inactivation of Bacteria Exposed to Gamma Rays from a Cobalt-60 Source *

Organism	*Time for inactivation Dose (e^{-1}) (minutes)*
Ps. fluorescens	2.8
A. aerogenes	4.4
S. marcescens	4.6
E. coli	6.2
M. pyogenes var. *albus*	11.0
C. xerose	15.6
M. pyogenes var. *aureus*	21.6
B. thermoacidurans	39.3
S. faecalis	50.6

* Dose rate equals 1,500 roentgens per minute

organisms are killed by doses of 300,000 rep (roentgen equivalents physical). No organoleptic preference has been found between inoculated liquid eggs irradiated at this level and then spray-dried and untreated liquid eggs that have been spray-dried.

Promising experimental results have been obtained by using low doses of ionizing radiations to sterilize food surfaces that have been contaminated by handling subsequent to processing. The possibilities of using this method for food products such as bacon, bread, and smoked sausage products to obviate the contamination resulting from human handling or environmental conditions are evident.

PASTEURIZATION OF MILK

Various investigators in the field have shown that milk can be pasteurized by comparatively low doses of high-voltage cathode rays. This is illustrated in Table 2. Certain undesirable flavor changes, however, will have to be overcome before pasteurization of milk in this manner becomes practicable.

TABLE 2

Effect of Irradiation by High-Voltage Cathode Rays on the Survival of Microorganisms in Raw Milk *

Dose (rep)	*Bacteria per ml.*	*Survival (Per cent)*
Control	275,000	—
100,000	9,000	3.3
200,000	700	0.25
300,000	130	0.05
500,000	5	0.00
750,000	0	0
1,000,000	0	0

* Proctor, B. E., and O'Meara, J. P. Unpublished data, MIT, 1949

STERILIZATION OF WATER AND SEWAGE

Dunn [2] recently presented a paper before the American Chemical Society in which he indicated the possibilities of using ionizing radiations for purposes of sterilizing water and sewage. This research revealed that the microorganisms in water and sewage may be killed by relatively low irradiation doses.

DESTRUCTION OF INSECTS

Irradiation with cathode rays may soon be an economical method of destroying insects in grain products, and this irradiation may be applied to insects in all stages of development. Insects are relatively sensitive to ionizing radiations, being killed by doses of less than 100,000 rep. The elimination of insect infestation in grain may be accomplished with relatively small expenditure of energy, hence with lower costs.

DESTRUCTION OF TRICHINELLA SPIRALIS

Alicata and Burr [1] have shown that trichinae in pork may be destroyed with low doses of high-voltage cathode rays. Trichinosis has long been a public health problem in this country. The possibility of using this means of eliminating sources of trichina infections should be given careful consideration.

STERILIZATION OF DRUGS AND BIOLOGICALS

Investigations instigated at the Massachusetts Institute of Technology some five years ago indicated the possibility of sterilizing penicillin without causing undesirable changes in this compound. Some of the results obtained are shown in Tables 3 and 4.

One of the leading drug houses in this country has already purchased a pilot plant model of a particle accelerator for purposes of sterilizing drugs and biologicals. Other organizations are also working on this problem.

STERILIZATION OF BLOOD

A problem that has some public health significance is the sterilization of animal blood to be used for food. It has been found possible to dry blood and then sterilize it with ionizing radiations without producing changes that can be determined by organoleptic tests. The

TABLE 3

Effects of Cathode Rays on Antibiotics

Product	*Dose (rep)*	*Sterility*	*Potency*	*Color*	*Toxicity*
Streptomycin	1.5×10^6	yes	O.K.	Not O.K.	None
	2.0×10^6	no	O.K.	Not O.K.	None
$CaCl_2$ complex	2.5×10^6	yes	O.K.	Not O.K.	None
	3.0×10^6	yes	Not O.K.	Not O.K.	None
Dihydro-Streptomycin Parenteral Solution	1.5×10^6	no	O.K.	O.K.	None
	2.0×10^6	no	O.K.	Not O.K.	None
	2.5×10^6	yes	O.K.	Not O.K.	None
	3.0×10^6	yes	O.K.	Not O.K.	None
Procain Penicillin G	1.5×10^6	no	O.K.	Not O.K.	None
	2.0×10^6	yes	O.K.	Not O.K.	None
	2.5×10^6	yes	O.K.	Not O.K.	None
	3.0×10^6	yes	O.K.	Not O.K.	None

TABLE 4

Biological Effect of Supervoltage Cathode Rays on Pharmaceuticals

Product	*Dose (rep)*	*Bacterial Spore Contamination*		*Loss in Potency After Irradiation*
		Before Irradiation	*After Irradiation*	
K. Penicillin	4.1×10^6	yes	no	no loss
Ergotrate	4.1×10^6	yes	no	50%
Ergotrate	0.5×10^6	—	—	no loss
Thromboplastin	4.1×10^6	yes	no	100%
Insulin	4.1×10^6	yes	no	98%
Insulin	0.1×10^6	—	—	100%
Protamine Zinc Insulin	4.1×10^6	yes	no	100%
	0.1×10^6	—	—	75%
Thiobarbiturate	4.1×10^6	yes	no	Slight loss
B Complex + Vit. C.	4.1×10^6	yes	no	no loss
Duracillin in oil	4.1×10^6	yes	no	no loss
Influenza virus	4.1×10^6	—	—	*
MM Poliomyelitis	4.1×10^6	—	—	*

* Nonirradiated was virulent; irradiated was nonvirulent

doses used for this material have been of the order required for destroying the most resistant spore-forming bacteria.

In cooperation with the National Research Council, an investigation was started some time ago to determine the possibilities of using ionizing radiations to sterilize whole blood to be used for transfusion. Some of the difficulties encountered in this sterilization problem have been overcome, but others remain to be solved.

STERILIZATION OF HUMAN ORGANS FOR SUBSEQUENT TRANSPLANTS

During the last two years the Department of Food Technology at the Massachusetts Institute of Technology has cooperated with surgeons at the Harvard Medical School in conducting studies concerning the sterilization, by means of ionizing radiations, of aortas for subsequent transplant. When these studies were started, dogs were used as experimental animals. Aortas sterilized in this manner have now been successfully transplanted into human beings and to date 15 human beings have had sections of their aortas replaced successfully with tissues that were removed from fresh cadavers and sterilized with ionizing radiations.

GENERAL CONSIDERATIONS

Although it has been shown that ionizing radiations are capable of de-

stroying microorganisms of all kinds, a number of problems associated with the effects of this method of sterilization on certain materials have yet to be solved. In many cases in which foods are irradiated, undesirable flavor changes are induced. Research has been instituted in which the so-called "free radical acceptors" have been used as a means of obviating such flavor changes, and the results have been encouraging.

When materials containing water are irradiated with high-voltage cathode rays, free hydroxyl radicals and free hydrogen atoms are produced.

$$H_2O \longrightarrow (H) + (OH)$$

Hydroxyl radicals are powerful oxidizing agents and hydrogen atoms are powerful reducing agents. If compounds are present in foods that may be either oxidized or reduced, chemical changes will take place that may result in undesirable flavors.

$$\text{Flavor molecule} + (OH) \rightarrow \text{Oxidized off-flavor}$$

Such changes often take place when foods are irradiated. If, however, a compound is introduced into the food that shows greater affinity for the particular radical involved than do the compounds already present in the food, the difficulty of off-flavor development may be obviated.

$$\text{Flavor molecule} + (OH) + \underset{\text{(reduced)}}{\text{F.R.A.}} \rightarrow \text{Flavor molecule} + \underset{\text{(oxidized)}}{\text{F.R.A.}} + OH^-$$

It has been found that ascorbic acid or vitamin C and its analogues will, in many cases, act as a free radical acceptor and prevent flavor changes in food products during and after irradiation. Ascorbic acid is a type of compound that in itself would have no toxic effect when added to foods.

Other factors have yet to be determined before ionizing radiations can be used commercially for sterilizing food products. Toxicological studies must be carried out, and such studies should be made in collaboration with the various federal agencies concerned with such problems. There has been no report of adequate studies of this type.

To date there is a paucity of information dealing with the storage life of irradiated foods at various temperatures, although projects of this nature are being carried out at the present time.

Within the past two years considerable emphasis has been placed on the peacetime use of atomic energy. The use of waste fission products as a source of ionizing radiations for the purpose of sterilizing foods and other materials has been suggested.

In atomic fission a number of new elements are produced in significant quantity, varying in mass numbers from 85 to 150. These elements are very radioactive, and some of them are of high enough energy and have a long enough half-life to be of importance as a source of ionizing radiations to be used for purposes of destroying microorganisms.

At the present time these materials are being buried in vaults in various parts of the United States until their radioactivity diminishes. If such materials can be concentrated, they might be useful sources of ionizing radiations, provided the cost of sterilizing with such materials compared favorably with the cost of sterilizing by means of particle accelerators. It has been estimated that in from five to seven years sufficient atomic waste materials will be available for commercial needs.

At the present time the practicability of using artificially produced isotopes as a source of ionizing radiations is being investigated at the Massachusetts Institute of Technology and several other institutions.

Cobalt-60 is a powerful source of gamma rays, and studies are underway

concerning the effect of emanations from this material on microorganisms, foods, enzymes, and other biological materials. The results of such research may be compared with those obtained by the use of high-voltage cathode rays produced by particle accelerators. Much remains to be done, although it has been determined that sterilization may be brought about by either method.

SUMMARY

During the last seven years it has been shown that all kinds and types of microorganisms can be destroyed with ionizing radiations.

Whereas, radiations of this kind frequently produce undesirable flavors in foods, there are indications that these changes may be prevented by the incorporation of certain chemical compounds.

Before this method of sterilizing food can be approved by government agencies for commercial use, extended toxicological studies are necessary.

It has been found that water, sewage, and antibiotics can be sterilized with ionizing radiations.

Another possibility of great promise is the use of ionizing radiations to sterilize human organs removed from fresh cadavers in order that they may be held for subsequent transplant.

It is believed that other important aspects of these investigations may be developed in the future.

ACKNOWLEDGMENTS—Grants that have assisted these studies, for which thanks are extended, have been received from: U. S. Atomic Energy Commission; Office of the Quartermaster General, U. S. Army; U. S. Naval Supply Research and Development Facility; American Can Company; Continental Can Company; General Foods Corporation; Oscar Mayer and Company; United Fruit Company, and Wilson and Company.

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A practical laboratory test is described here which is of high diagnostic value in excluding the likelihood of active rheumatic fever. However, the test is not reliable as a diagnostic aid for the specific identification of active RF.

Antistreptolysin-O Serum Levels*†

Their Determination and Use as a Diagnostic Aid with Particular Reference to Active Rheumatic Fever in Children

NELL F. HOLLINGER, PH.D.

Assistant Professor of Public Health, School of Public Health, University of California, Berkeley, Calif.

STREPTOLYSIN-O is a streptococcal product which can be fractionated in relatively pure form from a suitable liquid medium in which certain group A streptococci have been actively growing.[1] Only in the reduced state is it lytic for red blood cells,[2] but it can be neutralized in either the reduced or the oxidized form by the antibody, antistreptolysin-O. The antibody, antistreptolysin-O, is present at some time in the serum of at least 90 per cent of individuals who have had streptococcal infections.[3] The antigen, streptolysin-O, can be used to test for the presence of this antibody. A red blood cell suspension is added to a previously incubated serum-reduced antigen mixture. If the serum does not contain antistreptolysin-O, or if an excess of the antigen, streptolysin-O, is present, the antigen (excess) retains its lytic property and the red blood cells will be hemolyzed.[4] The determination of antistreptolysin-O titer (AST-O), described above, is dependent upon a source of stable, standardized, reduced antigen, streptolysin-O. Preparation of such an antigen is time-consuming, and standard antistreptolysin-O serum (for determination of the antigenic unit) has not been readily available. In 1938 Todd[5] distinguished streptolysin-S, a product formed when group A streptococci are grown in a serum medium, from a streptolysin-O formed in a broth medium. Only the latter will be considered here.

As early as 1933, Todd[4, 6, 7] had concluded that streptolysin-O was a separate antigen, distinct from other streptococcal products, and that the presence of the antibody antistreptolysin-O (AST-O) in the serum of horses or of human beings was the result of a specific immune response to this antigen. Subsequently many AST-O studies were made in an attempt to clarify the etiology of rheumatic fever (in which the streptococci had long been suspect) or to find a serum level of antistreptolysin-O sufficiently high to serve as a definitive diagnostic index for this disease.[3] Waksman,[8] in an extensively documented review of the etiology of rheumatic fever, indicated that neither purpose had been achieved by 1949, concluding that "No measurable change has been found in rheumatic fever to serve as a diagnostic tool and starting point for research, except for postmortem histologic changes."

In 1945, however, Parks[9] suggested that a *low* antistreptolysin-O titer

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* Presented before the Laboratory Section of the American Public Health Association at the Eightieth Annual Meeting in Cleveland, Ohio, October 24, 1952.

† Support was received for these studies as follows: 1948–1949 Faculty Research Grants, University of California, and D. A. Beattie Research Fund; 1949–1950 California Department of Public Health; 1951–1952 National Heart Institute of the USPHS.

(AST-O) might be used as one evidence of the absence of active rheumatic fever and Rantz [10] referred to this application the next year. In 1949, Harris [11] commented that "a negative reaction to . . . an antistreptolysin test" has greater significance than a positive reaction (high AST-O).

The present study was designed to discover if a minimum titer (serum level) of antistreptolysin-O might be established as an additional guide (diagnostic exclusion index) in active rheumatic fever. If all AST-O tests on active rheumatic fever patients have values at or above a given level, tests showing titers below this limit could be designated as *negative*, i.e., *low*. Thus, a low AST-O serum level could serve to indicate the absence of active rheumatic fever in the same manner that a negative tuberculin reaction is used as confirmatory evidence of the absence of active tuberculosis. Since the highest mortality rates for rheumatic fever are in children,[12, 13] these studies have been limited to sera from individuals under 21 years of age.

In order to facilitate the application of the test, large-scale production of stable, standardized, desiccated streptolysin-O was attempted.

MATERIALS AND METHODS

Preparation of the Standardized Antigen, Streptolysin-O

Richards * strain streptococci (group A, type 3) were grown actively in modified Todd-Hewitt [14] broth for 18–20 hours, then removed by Sharples centrifugation. The antigen, streptolysin-O, was precipitated by ammonium sulfate [15] (57 per cent saturation), removed by Sharples centrifugation, dialyzed against tap water until free of sulfate, and sterilized by Seitz filtration. The liquid form of the antigen was standardized and divided into two aliquots. One was stored in liquid form at 2° C. The other was reduced, frozen, and desiccated † according to the method of Randall and Rantz,[16] stored at 2° C. and the standard unit checked at intervals over a 2-year period.

Standardization ‡ was carried out in terms of combining units [17] according to the method of Rantz and Randall.[15] The antistreptolysin-O titers (AST-O) of the sera tested were then expressed in Todd [6] units.

Determination of AST-O—In the test for AST-O, as developed by this investigator, prediluted, varying amounts of unknown serum were added to each of 7 tubes (1.5 x 10 cm.), and then sufficient phosphate buffer (pH 6.5) was added to bring the volume in each tube to 1.0 ml. Reduced streptolysin-O (0.5 ml.) containing one combining unit

* During the initial period a Richards strain streptococcus, standard antistreptolysin-O sera, and welcome technical advice were given through the generosity of Lowell Rantz, M.D., Department of Medicine, Stanford University School of Medicine. An aliquot of standard Todd antistreptolysin-O rabbit serum was furnished through the kindness of Rebecca C. Lancefield, M.D., at the Rockefeller Institute for Medical Research.

† Cutter Laboratories, Berkeley, Calif., generously (without cost) loaned equipment not otherwise available to this investigator, and control personnel from Cutter volunteered to aid in large-scale desiccation of antigen not previously attempted by Randall and Rantz.[16]

‡ Several investigators tested the lytic antigen against 0.5 ml. of 5 per cent rabbit cells, and the amount which just gave complete hemolysis was termed the minimal hemolytic dose (MHD). The antistreptolysin titer was then recorded as the volume of serum required to neutralize 2½ MHD of streptolysin (antigen) and expressed as fractions of 1.0 ml.,[4] and later as the reciprocal of these fractions.[6] When antigen was found to show a variable potency as tested against rabbit cells, a single pool of specific immune horse serum was tested by Todd and found to have a titer of 20,000 units in terms of the MHD. Such Todd antiserum is still used as an arbitrary standard to test the combining (neutralizing) power of new lots of antigen. In determining the combining power of a new lot of antigen, varying quantities of the reduced antigen are diluted to constant volume in a series of tubes and the amount just neutralizing one unit of the standard antiserum is termed the combining unit as suggested by Hodge and Swift.[17] The antistreptolysin titer of an unknown serum is then obtained by testing it against antigen of known combining power, and the serum titer is expressed as the reciprocal of the serum volume neutralizing one combining unit of this antigen. As determined in this way, the units of Todd (defined in terms of MHD) and of Hodge and Swift (defined in terms of combining units) are considered as equivalent.

was then added, and the combining of antigen and antibody was facilitated by incubation in a water bath at 37° C. for 15 minutes. Immediately after the combining period, 0.5 ml. of a 5 per cent red blood cell suspension in 0.85 per cent NaCl (obtained from previously packed erythrocytes) was added to the test mixtures, and the tests incubated in the water bath at 37° C. for 45 minutes. The tests were removed from the water bath with a minimum of shaking and inspected for hemolysis after the erythrocytes had settled for half an hour at room temperature. The least amount of serum which completely inhibited hemolysis was used as the basis for the calculation of the AST-O unit; i.e., if the AST-O was 100 Todd units, complete inhibition was shown in the 1/100 dilution but not in the 1/125 dilution (in other words, there was no hemolysis in the 1/100 dilution and there was *some* hemolysis in the 1/125 dilution). The usual control tests were included, i.e., known negative serum, known positive serum, erythrocyte and lysin controls. A series of comparative tests showed that either human (any blood group) or rabbit erythrocytes could be used, and that equivalent results were obtained with the reduced liquid and the reconstituted desiccated forms of the antigen. The reproducibility of the determination for AST-O was then tested.

Intralaboratory Reproducibility (Reliability) of AST-O Values Obtained on a Single Pool of Serum—A pool of antistreptolysin-O serum was divided into 6 aliquots to be tested against one lot of desiccated antigen. On one aliquot, 25 tests for AST-O were made the same day; the other aliquots were frozen at 10° C. From day-to-day, over a time period of 6 weeks, one frozen aliquot was selected and thawed, 25 tests for AST-O then made on it within 24 hours and the results recorded in Todd units.

Interlaboratory Field Trials on the Reliability of AST-O Determinations—Directors in 21 laboratories (7 public health, 7 hospital, 7 private laboratories) agreed to cooperate in this project.*

Directions for the determination of AST-O, desiccated antigen, a positive and negative serum control and 5 sera (labelled only as 1 through 5) were mailed to each laboratory.

In each laboratory a designated serologist, previously unacquainted with the AST-O test, made the determinations according to the directions received, and reported the results to the control laboratory of this investigator.

Clinical Material—For determination of the *normal* AST-O level, certain sera † from well children were supplied by Hammon.[18] In San Francisco,‡ Calif., sera were obtained from well school children in whom no illness was suspected by a physician. Sera from well children in Vermont, were supplied by Robert J. McKay, Jr., M.D.** In this manner the serum of each of 2,988 well children was collected and tested for AST-O.

Test sera from children in whom active rheumatic fever or other illness was suspected by a physician were ob-

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* Appreciation is expressed for this cooperation. Space prohibits listing all individuals and laboratories by name.

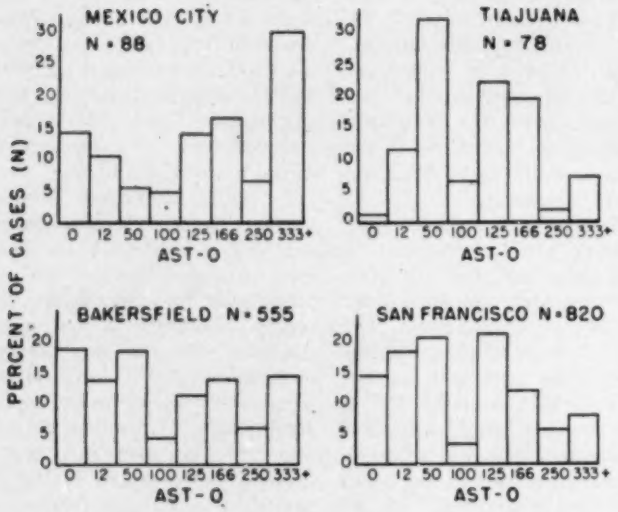
† Sera from Dallas, Tex.; Durham, N. C.; Mexico City and Tiajuana, Mexico; and Bakersfield, Calif.

‡ Blood collected through the cooperation of Dr. J. C. Geiger, then health officer of San Francisco; Dr. Paul S. Barrett, director, Bureau of Child Hygiene, City and County of San Francisco; Doris L. Robinson, director of public health nursing, San Francisco Department of Public Health; Mary Huston, R.N., public health nurse, Hooper Foundation; and Dr. Herbert C. Clish, superintendent of San Francisco schools.

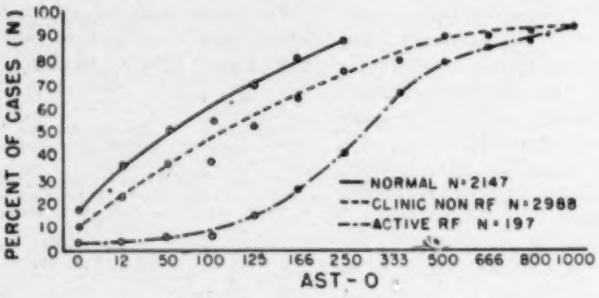
** Appreciation is expressed for the cooperation of the following physicians and diagnostic centers:

Sim P. Dimitroff, M.D., cardiologist, Inglewood Health Center, Calif.; Consulting Medical Staff, Crippled Children Services, Rheumatic Fever Program, Permanente Medical Center, and Lillian Ellefson, M.D., Richmond City Clinic, Calif.; Saul Robinson, M.D., City and County of San Francisco, Department of Public Health; Georgia B. Perkins, M.D., Denver Rheumatic Fever Diagnostic Service, University of Colorado, Department of Medicine, Denver; Jerome S. Harris, M.D., Department of Pediatrics, Duke Hospital, Durham, N. C.; Harriet Bates, M.D., Children's Medical Center, Dallas, Tex.; and Robert J. McKay, Jr., M.D., Mary Fletcher Hospital, Burlington, Vt.

FIGURE 1



ANTISTREPTOLYSIN-O TITER FREQUENCY DISTRIBUTIONS FOR NORMAL CHILDREN IN 4 LOCATIONS



CUMULATIVE % ESTIMATED FROM THE FREQUENCIES OF AST-O SERUM LEVELS TABULATED AS NORMAL, CLINIC NON RF AND ACTIVE RF

tained from 3,185 children, referred without a means test [19] to one of 7 diagnostic centers.* A diagnosis was forwarded to this investigator after extensive medical and laboratory examinations of the patient had been made. When the clinic diagnosis for a child was received, the AST-O value was tabulated under one of two categories: active RF (if the diagnosis was active rheumatic fever) or clinic-nonRF (if the diagnosis was any other illness). The AST-O serum level, recorded weekly for 5 weeks to 8 months on each of 17 children, was tabulated as active RF for 11 patients (6 receiving ACTH, 5 cortisone) and as clinic-nonRF for 6 patients (all receiving cortisone and diagnosed as having rheumatoid arthritis). The data presented in tables or graphs refer to only one test for each child, i.e., to the number of children.

RESULTS

Large Scale Production of Desiccated Antigen, Streptolysin-O — Sufficient streptolysin-O for 40,000 AST-O determinations (7 tube tests) was produced from one aliquot of liquid lysin. The antigenic unit remained the same for 2 years, then decreased. Later such antigen was made available * throughout the United States and is no longer produced by this investigator.

Intralaboratory Reproducibility (Reliability) of AST-O Values Obtained on a Single Pool of Serum—Under the conditions described under methods, 108 or 72 per cent of 150 AST-O determinations made on separate aliquots of the same serum gave the same titer of 100 Todd units and 42 or 28 per cent differed from this titer by ±1 tube. Thus, the reliability was within ± tube limits for 100 per cent of the tests.

Interlaboratory Field Trials on the Reliability of AST-O Determinations—Under the conditions described under methods, 21 laboratories reported a total of 105 tests for AST-O on sera submitted from the control laboratory of this investigator. Within the limits of the test (±1 tube), 95 per cent of the reported AST-O values were the same as those of the control laboratory.

AST-O Levels for Well Children (the normal AST-O Pattern)—It was at once evident from observation of the bar graphs in Figure 1, that, for children 6 months to 19 years of age, the *normal* AST-O pattern varied with location within a nation (Mexico) and within a state (California). Chi square analysis [20] of the cumulative percentages of normal AST-O values for California, North Carolina, Texas, and Vermont (Table 1) indicated that no *2 normal* AST-O patterns were statistically alike. The same method of analysis indicated that the normal AST-O patterns shown in Table 1 were different from each other and from the normal patterns in Figure 1. On the basis of these findings on 2,313 AST-O values, it was concluded that a *universal* pattern for normal AST-O was not obtained, and it was considered improbable that additional AST-O determinations would attain that goal. It is apparent that for all areas studied (Table 1), with the exception of Texas, approximately 33–50 per cent of all values for AST-O are below the level of 100 Todd units.

If all values above 250 Todd units are arbitrarily considered as *high*, the data in Table 1 indicate that for Texas and Vermont approximately 25 per cent, for California and North Carolina about 15 per cent of *normal* AST-O values will be classified as *high*.

AST-O Serum Levels, Clinic-nonRF (for Children with Illness Other than Active Rheumatic Fever)—The chi square method of analysis [20] of the cumulative percentages for AST-O levels tabulated as clinic-nonRF for each area listed in Table 1, again indicated signifi-

* Biological supply depots of Cutter Laboratories, Berkeley, Calif.

TABLE 1

Cumulative Percentages Estimated from the Frequencies of AST-O Serum Levels Tabulated as Normal, Clinic-nonRF and Active RF

AST-O in Todd Units	Total Per cent			Normal				Clinic-nonRF					Active RF				
	Normal	Clinic-nonRF	Active RF	Calif.	N.C.	Tex.	Vt.	Calif.	Col.	N.C.	Tex.	Vt.	Calif.	Col.	N.C.	Tex.	Vt.
0	19.1	10.1	2.0	20.6	8.9	0	16.9	9.8	10.4	3.9	2.7	18.7	2.2	2.4	0	0	..
12	35.8	22.3	3.0	38.0	20.3	2.2	39.4	22.9	20.6	15.7	18.9	38.5	3.6	2.4	0	0	..
50	52.9	34.0	4.6	55.6	32.9	12.9	54.9	36.0	30.1	33.3	32.4	50.5	5.1	2.4	0	14.3	..
100	56.5	37.3	6.6	59.0	39.2	18.3	56.3	39.5	33.0	43.1	37.8	51.6	8.0	2.4	0	14.3	..
125	71.0	52.7	15.7	73.7	54.4	34.4	64.8	55.8	47.5	64.7	45.9	60.4	17.5	9.8	0	42.9	..
166	82.4	66.9	27.9	84.8	64.6	53.8	76.1	71.1	60.7	78.4	56.7	71.4	30.7	21.8	0	57.1	..
250	88.2	75.7	42.6	89.8	83.5	67.7	77.5	81.2	67.7	88.2	73.0	75.8	48.2	29.3	25.0	57.1	..
333	..	86.8	68.0	..	..	..	..	91.1	80.5	98.0	81.1	87.9	73.0	51.2	75.0	85.7	..
500	..	91.8	80.7	..	..	..	..	95.7	85.6	98.0	97.3	96.7	86.9	61.0	87.5	100.0	..
666	..	93.5	87.8	..	..	..	..	96.9	88.3	100.0	97.3	97.8	92.7	75.0	87.5	..	..
800	..	95.3	91.4	..	..	..	..	98.3	90.6	..	100.0	98.9	97.1	78.0	87.5	..	..
1,000	..	96.6	96.4	..	..	..	..	99.2	92.7	..	..	98.9	100.0	90.2	87.5	..	..
Total cases (N)	2,147	2,988	197	1,904	73	93	71	1,622	1,187	51	37	91	137	41	8	7	4

TABLE 2

AST-O Serum Levels for Children with Active Rheumatic Fever

AST-O in Todd Units	Σf	Per cent Total Established By Σf	Per cent Total Established By Σ Per cent	Frequencies (f)					Per cent Estimated on f					Σ Per cent
				Calif.	Col.	N.C.	Tex.	Vt.	Calif.	Col.	N.C.	Tex.	Vt.	
0	4	2.0	0.9	3	1	..	..	..	2.2	2.4	..	..	..	4.6
12	2	1.0	0.3	2	..	..	..	..	1.5	..	..	..	..	1.5
50	3	1.5	3.2	2	..	..	1	..	1.5	..	..	14.3	..	15.8
100	4	2.0	0.6	4	..	..	..	..	2.9	..	..	..	..	2.9
125	18	9.1	9.1	13	3	..	2	..	9.5	7.3	..	28.6	..	45.4
166	24	12.2	7.9	18	5	..	1	..	13.1	12.2	..	14.3	..	39.6
250	29	14.7	17.9	24	3	2	..	..	17.5	7.3	25	..	..	89.4
333	49	24.9	25.1	34	9	4	2	..	24.8	22.0	50	28.6	..	125.4
500	25	12.7	10.1	19	4	1	1	..	13.9	9.8	12.5	14.3	..	50.5
666	14	7.1	4.1	8	6	..	..	..	5.8	14.6	..	..	..	20.4
800	7	3.6	1.4	6	1	..	..	..	4.4	2.4	..	..	..	6.8
1,000	10	5.1	8.0	4	5	..	..	1	2.9	12.2	..	..	25	40.1
>1,000	8	4.1	19.5	..	4	1	..	3	0	9.8	12.5	..	75	97.3
Total cases (N)	197			137	41	8	7	4						

cant differences. Thus the findings for clinic-nonRF titers, as for normal titers, were not alike for California, Colorado, North Carolina, Texas, or Vermont, and no *universal* finding was obtained. However, it is evident that at least 30 per cent of all AST-O values are below the level of 100 Todd units even for Texas (32 per cent).

It is evident from the cumulative percentages (Table 1) that the following clinic-nonRF AST-O values fall above a level of 250 Todd units (a level arbitrarily chosen as *high*): 30 per cent, approximately, for Colorado and Texas; 20 per cent at least for California and Vermont; ±10 per cent for North Carolina.

AST-O Serum Levels, Active RF (for Children with Active Rheumatic Fever)—Analysis by chi square [20] indicated that in active rheumatic fever, the AST-O pattern was different for each state (Tables 1 and 2), and that no *universal* pattern for AST-O serum levels was obtained. As estimated on cumulative per cent, only 4.6 per cent of all AST-O values fall below the 100 unit level; if the total per cent is estimated on the basis of per cent for all areas, it is evident that only 4.4 per cent of all AST-O values fall below the 100-unit level.

In one California clinic, it was found that, for 7 out of 86 children, the AST-O dropped below the 100-unit level once in 10 or more determinations, made while the child was still diagnosed as having clinically active rheumatic fever. The inadvisability of a single AST-O serum level as a diagnostic index is clearly evident.

AST-O Serum Levels and Therapy with ACTH or Cortisone—For the 17 patients studied, the AST-O level did not appear to be dependent on ACTH or cortisone therapy. Seven of 11 AST-O records, tabulated as "active RF on ACTH or cortisone for 5–8 weeks" and 5 of 6 tabulated as "rheumatoid arthritis on cortisone therapy" for two and one-half to 8 months did not show a difference in AST-O level greater than ±1 tube. The other AST-O records were not different in pattern from those of children on therapy [21] other than ACTH and cortisone.

DISCUSSION

Reliability (Reproducibility) of AST-O Determinations—Results on intralaboratory AST-O determinations indicate the reliability of the test is entirely satisfactory, i.e., is the same (±1 tube) as that found by Kabat [22] for serial dilutions of other serological tests. Interlaboratory test results (95 per cent of 105 reports within ±1 tube) seem a clear indication that, as performed with desiccated antigen, the test for AST-O is a simple, reliable serological procedure.

AST-O Serum Levels—It is apparent from the results recorded that if an attempt were made to discriminate between children with active rheumatic fever and nonrheumatics (normal children or children with illnesses other than active rheumatic fever) on the basis of a high AST-O (over 250 Todd units), 10–30 per cent of 5,135 nonrheumatics (995 children) would be misclassified as active rheumatics, and that 25 of 197 active rheumatics (84 children) would be misclassified as nonrheumatics. These findings are in conformity with those of Taran, *et al.*,[31] of Harris, *et al.*,[23] and of Rantz, *et al.*[24]

In contrast, if a low AST-O (50 units or less) is used to exclude the presence of active rheumatic fever, only 4.6 per cent of 197 active rheumatics (9 children) would be misclassified as nonrheumatics. Of the 9 children misclassified, 5 were patients in the same clinic and only one AST-O value was obtained for each. The fact that approximately 30 per cent of normal and of clinic-nonRF AST-O values are below 100 units indicates low values often

TABLE 3

Antistreptolysin "O" Titers (AST-O) in Active Rheumatic Fever

Titer 50 or Less AST-O (Todd) Units No. of Cases	*Total Cases Active R.F.*	*Age Group in Years*	*Investigators and Location*	*Reference*
None	23	Military Personnel	Anderson, Kunkel, and McCarty Rockefeller Institute	J. Clin. Investigation 27:425–434 (July), 1948
None	15	6–68	Blair and Hallman Hosp. Joint Diseases New York City	*Ibid.* 14:505–515 (Sept.), 1935
None	56	Children	Breese and Gray	New York J. Med. 51:389–391 (Feb.), 1951
None	40	Children	Coburn and Pauli Columbia University, New York City	J. Exper. Med. 56:609–676 (Nov.), 1932
None 2 None	41 271 72	8–13		J. Clin. Investigation 14:769–781 (Nov.), 1935
None	23	Not given	Griffiths, G. J. Devonshire Hospital Buxton, England	Lancet 227:251–252 (Aug.), 1934
None	100	Up to 21	Harris, T. N. Univ. Pennsylvania School of Medicine, Philadelphia	J. Exper. Med. 87:57–70 (Jan.), 1948
None	126	Children		Pediatrics 3:482–503 (Apr.), 1949
None	86	Young Adults	Quinn, R. W and Liao, S. J. Yale Univ. School of Med. New Haven, Conn.	J. Clin. Investigation 29:1156–1166 (Sept.), 1950
None	5	7–21	Massell, B. F., *et al.* House of the Good Samaritan, Boston	New England J. Med. 242:641–647 (Apr.), 1950
None	33	5–84	Meyers and Keefer Harvard Medical School, Boston	J. Clin. Investigation 13:155–167 (Jan.), 1934
None	53	Military Personnel	Rantz, L. A. Stanford Medical School San Francisco	Bull. U. S. Army M. Dept. 5:40–42 (Jan.), 1946
None	28	Military Personnel		Am. J. Med. 5:3–23 (July), 1948
9	197	Up to 21	Hollinger, Nell F. School of Public Health Univ. of Calif., Berkeley	A.J.P.H. 5:561 (May), 1953
None None None	49 26 58	6–16	Taran, L. M. St. Francis Sanatorium, Roslyn, L. I., N. Y.	J. Immunol. 53:381–390 (Aug.), 1946
None	37	3–21	Todd, E. W. Sutton, Surrey, England	Brit. J. Exper. Path. 13:248–259 (June), 1932.
11	1,339	Totals for these series on cases of active rheumatic fever diagnosed and followed for 3–10 months by specialized medical staffs using adequate equipment and tests.		

enough among nonrheumatics so that this negative screen would be practical in the geographical areas studies.

The value of a low AST-O as a negative exclusion index for active rheumatic fever is supported by data found in a search of the literature to date. Eleven groups of investigators* in 3 distinct geographical areas (England, East Coast United States, West Coast United States) have published values for antistreptolysin titers in active rheumatic fever cases. The results have been compiled with those of this investigator and are shown in Table 3. The figures in Table 3 indicate that, over a period of 20 years, an AST-O of 50 units or less was reported for only 11 of 1,339 individuals with active rheumatic fever. Extensive statistical treatment is unnecessary, since in only 0.82 per cent of the cases is a negative antistreptolysin reaction obtained on serum from a patient with active rheumatic fever. This compares favorably with data on false negatives in serological tests in untreated secondary or tertiary syphilis.[27] It is of the same magnitude as the incidence of false-negative Mantoux and Pirquet tuberculin tests, as shown by comparison with the skin test utilizing BCG.[28] It will be noted that the reports of 10 of the 12 groups of investigators show that 100 per cent of individuals with active rheumatic fever have a titer of over 50 Todd units.

Immune Response—It is clear that less than 1 per cent of individuals with active rheumatic fever have an AST-O serum level of 50 Todd units or less; whereas 30 per cent of AST-O levels of the normal and clinic-nonRF population tested were below this level, and also the findings of Swift[3] indicated that 10 per cent of persons known to have had group A streptococcal infections had "no production of AST-O antibody." These findings are in conformity with the conclusion of Griffiths[29] that rheumatic fever is "an unusual course in the immune response" to an original streptococcal infection.

On the basis of the cases studied, insufficient change in AST-O level was found to support the suggestion of Fischel[30] that "an inhibition of antibody response may be produced by ACTH" or by cortisone.

According to recent reviews (Quinn and Liao;[31] Harris and Harris[32]) no definitive serological or chemical index for the presence of active rheumatic fever has been established to date. Even if such an index is found, the low AST-O serum level should serve as a useful exclusion index for the absence of active rheumatic fever.

SUMMARY

The Determination of AST-O—The determination of antistreptolysin-O (AST-O) is a simple serological procedure now that the desiccated antigen, streptolysin-O, is available. Interlaboratory field trials and intralaboratory replicate tests show the results of such determinations are reproducible (reliable) within accepted serological limits (± 1 tube).

AST-O Serum Levels

Patterns—No universal pattern of AST-O serum levels was obtained for AST-O values tabulated as *normal* (for well children), active RF (for children with active rheumatic fever), or clinic-nonRF (for children with illness other than active rheumatic fever). However, with the exception of *normals* for Texas, 30 per cent of normal and clinic-nonRF AST-O values were found to be 50 or less Todd units for California, Colorado, North Carolina, Texas, and Vermont.

High-AST-O—A high AST-O serum level (over 250 Todd units) was found to be an ineffective and misleading guide when used as a single diagnostic index of

* It has been impossible to include some rather extensive studies, in which only the mean titer and range or standard deviation[26] or the per cent of cases (but not the AST) below 100 units[26] was recorded.

the presence of active rheumatic fever. On the basis of such an index, 995 or 19.4 per cent of 5,135 nonrheumatics (well children or children with illness other than active rheumatic fever) would be misclassified as active rheumatics; and 84 or 42.5 per cent of 197 children with active rheumatic fever would be misclassified as nonrheumatic, according to the data presented in this study.

Low AST-O—A low AST-O serum level (50 or less Todd units), obtained repeatedly for the same child, was found to be a highly reliable guide when applied as a single diagnostic index of the absence of active rheumatic fever. The AST-O values tabulated in the study and those published over a 20-year period by 11 groups of investigators in 4 geographical areas, show that only 11 or 0.82 per cent of 1,339 individuals with active rheumatic fever would have been misclassified as nonrheumatics if 50 or less Todd units were used as the diagnostic exclusion index.

AST-O Serum Level and the Diagnosis of Rheumatic Fever—The 1 per cent error of incorrect exclusion (small for a serological index) would indicate that re-evaluation of other medical findings might well be made if an AST-O serum level of 50 or less units is obtained repeatedly for a child with a clinical diagnosis of active rheumatic fever.

Comment is made on the immune response in active rheumatic fever.

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Medical Readiness for Emergencies

The U. S. Public Health Service is making continuing studies of how serious shortages of medical, dental, and hospital supplies during emergencies may be prevented. Determination of current civilian requirements are being made for the first time on a unit basis, which are then projected into the future to coincide with an assumed mobilization period. Completed requirements have been assembled for penicillin, surgical dressings, sterilizers, dental units and burs; other items important to "a state of readiness" are scheduled for future study.

Each survey entails cooperation with industrial production and sales staffs in order to secure a comprehensive analysis of the supply and demand relationship for each product. The information is kept on a confidential basis.

Working together on a state-wide system of community heart disease control programs are the state and the involved local health departments, the state and county medical societies, the medical schools and the Heart Association, and the public health nursing and social service groups, together with city officials and the State Vocational Rehabilitation Division. The product of the total program is more than a sum of its parts.

Development of a Cardiac Control Program in Georgia*

J. GORDON BARROW, M.D.

Associate in Medicine, Emory University School of Medicine, Grady Hospital, Atlanta, Ga.

CARDIOVASCULAR disease is the number one killer in the United States today and as such has become our foremost public health problem. In order to design a control program to combat these diseases the Georgia State Health Department and cardiologist members of the Georgia Heart Association worked in close cooperation. They realized that the knowledge which we already have, if properly applied, could prevent much heart disease and could greatly prolong the lives of most patients who already are affected.

They believed that a thorough professional education program which would bring these new advances to doctors, nurses, and other professional personnel throughout the state was of primary importance.

In addition they felt that while middle-and-upper-income groups were receiving good medical care of their heart disease, that lower-income groups were in great need of better organized facilities for care. It was therefore decided that a state-wide clinic program for the diagnosis and care of indigent cardiac cases was needed.

The third fundamental need was the stimulation of new research and the continuation of established research projects already being conducted in the state.

It was realized that the program, including as it did, education, community service and research, was too broad to be carried out by any one agency. It was believed that only a cooperative effort of all agencies, both public and private, interested in this problem, had any chance to succeed. The program which I am about to describe cannot therefore be credited to any one agency but is the result of the coordinated combined efforts of many different individuals and agencies.

EDUCATION

Professional education has been accomplished by several means. The leading cardiologists of the state have given freely of their time to a series of symposia held usually at district medical or nursing society meetings under the joint sponsorship of the State Health Department and the State Heart Asso-

* Presented before a Joint Session of the Food and Nutrition and Health Officers Sections of the American Public Health Association at the Eightieth Annual Meeting in Cleveland, Ohio, October 24, 1952.

ciation. Over 25 such symposia have been held during the past two years. At the annual meeting of the Heart Association leading cardiologists from other states have given a two-day program on recent advances in heart disease therapy. At the same meeting a one-day symposium on newer nursing technics in heart disease has been presented to the nurses. Around 800 doctors and 300 nurses have attended these symposia during the past two years.

Several professional publications have had state-wide distribution. *Modern Concepts of Cardiovascular Disease,* which is published monthly by the American Heart Association, is distributed each month to every doctor and medical student in the state.

The clinics have cooperated in the educational program by holding regular staff conferences for both nurses and doctors, by lending their facilities to the medical schools for the instruction of students, and by providing opportunities to postgraduate professional personnel seeking specialized experience.

COMMUNITY SERVICE

Community service has been accomplished primarily through the establishment of a state-wide clinic organization. The general functions of these clinics can be summarized as follows:

1. To act as a clearing house wherein all questionable cardiac cases might be evaluated so that the stigma of heart disease might be removed from as many as possible and yet early cases be recognized adequately.

2. To diagnose and treat all patients in accordance with the best current knowledge and technic, including the offering of cardiac surgery to those in whom it is deemed advisable.

3. To use all methods of prophylaxis so that heart disease might be prevented, or its progression halted. Specifically attempts are made to prevent rheumatic heart disease by educating the public to recognize it early; by treating active cases with adequate periods of supervised convalescence; by the prophylactic use of sulfadiazine or penicillin in potential rheumatic patients, and by the early and adequate treatment of acute streptococcal infections in these potential rheumatics. The occurrence of subacute bacterial endocarditis in rheumatic, congenital, and syphilitic heart disease patients is prevented by encouraging proper mouth care and by the prophylactic use of penicillin before and after each dental extraction, other surgical procedure, or maternal delivery.

4. To prolong the life of those who already have serious heart disease by giving them adequate medical, nursing, and social service care; by educating them to follow their medications and low-sodium diets properly and by saving them frequent unnecessary trips to and from the hospital by furnishing them with a home nursing service. The patients and their families are helped to maintain an emotional and social adjustment toward a long-term illness.

5. To reduce the total cost of care by providing a good home-care program so that hospitalization is shortened or made unnecessary and follow-up care improved and by acting as work classification units so that rehabilitation of moderate cardiacs into jobs fitted to their long-term capabilities is accomplished.

6. To act as an integrating agency so that all community services available to cardiac patients might be put to their fullest use.

With these functions in mind a state-wide network of clinics, based as nearly as possible on already existing facilities has been established.

At the time our program began, only two cardiac clinics existed in the state, in Atlanta and Augusta, one at each of the two medical schools. It was decided that the first step was to make these into strong regional clinics, which might offer the local clinics consultation services and the diagnostic and treatment facilities which would only be available at the medical schools, such as cardiac catheterization, angiocardiography, and cardiac surgery. It was also felt that the outpatient cardiac services of the university hospitals might develop model follow-up methods for the local clinics to copy. With this in mind and with financial assistance from the State Health Department, the staff of the re-

gional clinics was increased to include a half-time medical director-cardiologist, a clinic nurse, a medical social worker, secretarial and technical assistants, and public health nurses. In addition the medical school clinics were assisted by the Health Department and Heart Association in the purchase of certain specialized diagnostic instruments which were considered necessary to their proper functioning as consultation centers.

Records were made as uniform as possible. The standards of the American Heart Association were followed in making and recording the diagnosis and functional and therapeutic classifications of each patient. A standard cross-index of disease was devised and generally used. Several forms were tried for recording the examination and follow-up of patients, but it was found most practical for the doctors to dictate each note following a standard outline which suggested points to be covered in the initial work-up and the follow-up visits. Since the notes were dictated, it was an easy matter, when they were transcribed, to have copies of the doctors' notes made for the nurses in the field. Thus, new orders could be instituted at once, and any change in the condition of the patient was brought immediately to the nurses' attention.

It was found convenient to record laboratory reports, x-ray and fluoroscopic reports, and social service notes each on different colored sheets in the back of the chart so that they were instantly available.

The current diagnosis, therapeutic and functional classification, and any drug sensitivity of the patient was recorded on the inside cover of the chart, so that it came into instant view whenever the chart was opened.

Nurses' notes were typed from a daily report which was mailed or brought in by each field nurse and when the patient returned for a clinic visit the loose-leaf sheet containing the latest nurses' reports was attached to the chart for the doctor to read.

It may seem that we have gone into unnecessary detail in describing the records system, but we feel that each member of the medical team must be fully familiar with what is going on if proper follow-up of the patient is to be accomplished. Good records are the only possible way this can be done.

After the development of these two strong regional clinics it was felt that we could proceed with the development of a series of local clinics scattered in the population centers throughout the state. At the present time we have eight such clinics in operation, and three others ready to begin.

The following steps were usually followed by us in developing a local clinic. First, it was necessary to find a doctor or doctors who were considered properly qualified in this field and who would be willing to devote their time without charge to the operation of the clinic. If this was accomplished, we then asked for local medical society approval of the project. Under no circumstances was a clinic established without full medical society approval and cooperation.

The local health officer was then approached, the plan outlined, and he was asked to take part in the planning of the ways in which his department could cooperate with the project. Representatives of the State Health Department, the State Heart Association, the local doctors to be in charge of the clinic, and the local health officers were then called upon and specific plans for the project were drawn up. Often it was regarded as wise to approach a local civic organization and enlist them as a sponsor of the project. Many times free part-time secretarial help, clerical assistance, limited financial assistance, and extensive publicity were available through them.

Once this was accomplished a meeting

of all concerned with civic officials was called and the plan outlined to them for their approval. It was found that this presented an excellent opportunity to outline to the civic officials what their responsibilities and financial obligations toward the clinic would be when it opened.

Equipment needed for the local clinic was usually furnished either by the State Health Department or the State Heart Association and consisted of an electrocardiograph, a fluoroscope, blood pressure apparatus, and an ophthalmoscope. Arrangements were made either with the hospital officials or with the local health department for use of adequate clinic and laboratory facilities.

At this last meeting before the clinic opened the following things were decided:

1. The area to be served by the clinic was definitely defined.
2. The agency responsible for screening the patients for financial eligibility was picked. Usually the local welfare department carried out this function.
3. It was decided who might refer to the clinic. We have found it practical to limit referral to physicians. Under no circumstances should a patient be allowed to present himself without referral.
4. It was decided at this meeting who would be financially responsible for hospitalization of the clinic patients should it become necessary.
5. It was decided who would furnish medicine to the patient, since most of them are not able to buy it for themselves.

Once these matters are settled the local clinic can begin operation. Its services and follow-up program are similar to those in the regional clinics. Of primary importance is the home care and follow-up program which is usually entrusted to the local public health nurse. Many times, since medical social workers are not generally available, she also has to familiarize herself with community facilities so that she may act as a substitute for the social worker.

Two agencies which have been of particular help in our community service program have been the State Vocational Rehabilitation Division and the Crippled Children's Division of the State Health Department. Rehabilitation of cardiacs is of primary importance and we have found this former agency always willing to help the local clinic in not only job placement problems, but also in extensive retraining of certain cardiacs. In addition, many corrective operative procedures are possible with their help. The Crippled Children's Division has recently begun a program which supplements the work of the local clinics by furnishing convalescent care for rheumatic patients, operations in the congenital defects amenable to surgery, and transportation of patients from their local communities for consultation service in the regional clinics.

Here again, cooperative efforts have accomplished more than the clinics alone, or either agency alone could have accomplished.

A suggestion of what the clinics system in Georgia is accomplishing is given by the following statistics:

Total number of clinics in operation, 10; average total number of clinic ssessions per month, 82; average total number of doctors attending each clinic session, 31; average total number of patient visits per month, 2,911; average total number of home nursing visits per month, 830.

RESEARCH

The research program is of necessity centered at the two medical schools. Several different cardiovascular research projects representing an investment of many thousands of dollars are under way at the two medical schools at this time. Aside from these however each clinic is urged to sponsor clinical research problems since these only require carefully kept records and critical analysis, and are a definite stimulus to the doctors who operate the clinic.

SUMMARY

In summary then, Georgia has developed a state-wide cardiac control program through the cooperation of many individuals and agencies both public and private. This program has continued to grow and develop and its results are being widely felt throughout the state. We feel that through this cooperative effort, the fight against heart disease in Georgia has been advanced further in a short time than would be possible by any other means with so small a cash outlay.

National Health Council Meets

At the thirty-third annual meeting of the National Health Council in New York, March 18–20, Robin Buerki, M.D., director of the Henry Ford Hospital in Detroit, took office as president, succeeding Mrs. Oswald B. Lord, now United States delegate to the United Nation's Commission on Human Rights. A. W. Dent, president of Dillard University in New Orleans, was chosen president-elect to take office at the thirty-fourth annual meeting in 1954.

Three vice-presidents were elected: Margaret A. Hickey, public affairs editor of the *Ladies Home Journal*; Basil O'Connor, president of the National Foundation for Infantile Paralysis; and Donald Armstrong, M.D., second vice-president in charge of health and welfare, the Metropolitan Life Insurance Company. Philip R. Mather and Herbert I. Wood continue as treasurer and assistant treasurer respectively. Rome A. Betts, executive director of the American Heart Association, was elected secretary.

The American Dietetic Association and the National Society for Medical Research were elected to active membership, the National Federation of Business and Professional Women's Clubs to associate membership, thus bringing the total membership to 44 national organizations. The delegate body voted to open membership in the council to individuals and to state health councils, now organized in 30 states.

The meeting opened with a two-day forum on "Advancing the Nation's Health," launched with a panel discussion by members of the Commission on the Health Needs of the Nation, whose report, *Building America's Health*, had recently been published. Five discussion groups focused on personnel shortages, better health facilities, more effective organization of health services, financing health services, and public health research. These discussions were summarized at a dinner meeting attended by about 200 persons.

Proceedings of the forum meetings will be available shortly. National Health Council, 1790 Broadway, New York 19.

This paper, and the three that follow it, approach from various angles the challenging problem of providing home care as an adjunct to the hospital care of the medically indigent. Here the point is made that the joint service should be undertaken, not merely as an economy measure to relieve hard pressed hospitals, but as a worth-while addition to the over-all medical care plan.

Preliminary Report on Gallinger Home Care Study*†

SIDNEY SHINDELL, M.D., LL.B.‡

Medical Director, Commission on the Care and Treatment of the Chronically Ill, Aged and Infirm, Rocky Hill, Conn.

THE widespread interest that home care has received in recent years prompted the Public Health Service to undertake a study of this technic of augmenting the home care of a patient with long-term illness by supplying many of the services available otherwise only in hospitals. A primary purpose of the study was to determine the extent to which a municipal general hospital, devoted to the care of indigent patients, might be affected by a home care program of this nature. The services available to augment the homes of patients selected for home care are presented in Table 1.

In the space allotted, little more than a resumé can be given of the results of our study. This report, therefore, will be limited to a succinct discussion of three principal phases of the study project: (1) the nature of the eligible patient population; (2) the effect of home care in reducing hospital stay and costs; and (3) the extent to which the home care program conserved on the total number of beds used. No attempt will be made to discuss the extent to which patients utilized the services outlined previously, nor to describe fully how the figures here presented were derived from the basic data collected.

The project was set up as an independent administrative unit at Gallinger Municipal Hospital, in cooperation with the District of Columbia Department of Health and Hospitals. Patients were admitted to the study during a period of 17 months. This report is concerned

TABLE 1

Home Care Service of Gallinger Municipal Hospital Made Available the Following As Needed

Physician Services
Bedside Nursing
Medical Social Work
Physical Therapy
Occupational Therapy
Nutritional Supervision
Beds and Bedside Equipment
Technical Equipment
Wheelchairs, Walkers
Laboratory Service
Transportation
Housekeeping Service

* Presented before a Joint Session of the Conference of Health Council Work and the Health Officers, Medical Care, and Public Health Nursing Sections of the American Public Health Association at the Eightieth Annual Meeting in Cleveland, Ohio, October 21, 1952.

† This study was partially supported by grant CS-9090 from the National Cancer Institute, Public Health Service.

‡ Formerly Surgeon, Division of Chronic Disease and Tuberculosis, FSA, Public Health Service; Physician in Charge, Home Care Demonstration Project, Gallinger Municipal Hospital, Washington, D. C.

TABLE 2

Number of Admissions and Patient Days of Hospitalization by Medical Suitability for Home Care

Medical Suitability	Routine Admissions		Patient Days	
	No.	*Per cent*	*No.*	*Per cent*
Suitable for home care	34	5.5	2,034*	18.2*
Not suitable for home care	579	94.5	9,124	81.8
Total	613	100.0	11,158	100.0

* Length of stay for home care patients adjusted to compensate for days of hospitalization saved by Home Care Services

Gallinger Municipal Hospital, Washington D. C., Medical and Surgical Units—Patients admitted from Home Care Study Area—April 1, 1950 through June 30, 1950

with data collected over a 21-month period ending December 31, 1951.

The study project was concerned with patients admitted to the 520 beds in the buildings of Medicine and Surgery. Here the usual services in medicine, surgery, and their subspecialties are provided. Pediatric, obstetric, psychiatric, and tuberculosis patients, however, were excluded from the study. During the first three months we considered only patients from a limited geographical area. Physicians of the home care staff visited patients on the wards who lived within this study area within two weeks of their admission, specifically to determine their medical suitability for home care. If the physician felt that the medical treatment recommended could be carried out in an augmented home setting, that the patient's needs could not be met adequately through attendance at clinics of the hospital as an outpatient, and that these needs could not be met through the separate services provided for the acutely ill by the District of Columbia Department of Health, then he deemed the patient medically suitable. The medical opinion was independent of all other criteria for acceptability for home care. Patients about whom no clear-cut decision could be made on the first ward visit were seen weekly, until a definite classification was possible.

In the first three months of our study, 613 individuals from the geographical study area were admitted to the buildings of Medicine and Surgery at Gallinger Hospital. It will be noted from Table 2 that 34 (or 5.5 per cent) of these individuals met the criteria for medical suitability set-up by our home care staff physicians. If no home care had been available, these medically suitable patients would have required 18.2 per cent of the patient-days of care given to the entire group of 613. This hypothetical percentage is based on the experience of similar patients in the control group discussed below.

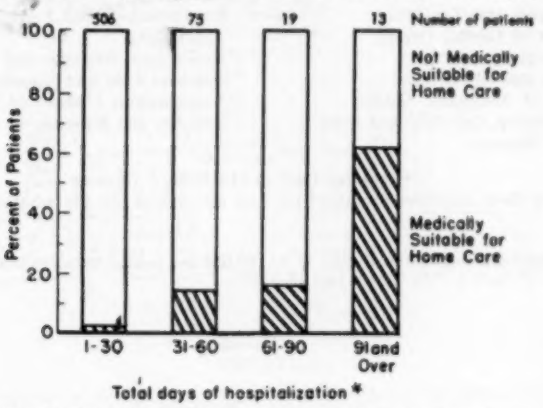
As was expected, only a small percentage of the short-term admissions in the study group were judged to be medically suitable. However, almost two-thirds of those patients who would have remained in the hospital over 90 days were medically suitable. This is shown in Figure 1.

Table 3 shows a list of the major diagnostic categories in which home care cases were found. More than three-quarters of the patients who were classified as medically suitable had diagnoses included in this list, which includes the more important chronic disabling conditions.

Table 4 shows a list of the diagnoses of almost one-half of the 613 routine admissions studied. These are, by and large, the usual acute conditions for which hospitalization is sought. There were no patients suitable for home care who had these primary diagnoses.

FIGURE 1

The per cent of patients medically suitable increases with length of hospital stay



*Length of stay for Home Care patients adjusted to compensate for days of hospitalization saved by Home Care Service

In addition to the 34 patients admitted during the first three months, 143 patients were admitted to this phase of the study—making a total of 177. We no longer obtained patients exclusively from the geographically restricted study area. Each person in this group of 177 medically suitable individuals was subjected to a technic of random selection, which resulted in a study series and a control series (Figure 2). The control patients were not considered further for home care, but were observed to determine what happened to such individuals when existing community facilities were used. They remained under the medical supervision of the hospital staff, which was responsible for whatever follow-up care might be necessary.

The study series was further divided into two groups—those for whom a plan for home care was made, and those for whom attempts to make a suitable plan for home care were unsuccessful. Over 60 per cent of the patients for whom the physician felt home care would be a suitable medical plan could not be placed on home care, mainly because of the lack of a responsible person in the home to give care consistent with the physician's orders for treatment.

The first phase of the study then indicated that 5.5 per cent of admissions to the buildings of Medicine and Surgery at Gallinger Hospital were judged to be medically suitable for home care. This 5.5 per cent were patients with chronic illness. About one-fifth

TABLE 3

77.5 Per cent of the Medically Suitable Patients Were in the Following Diagnostic Categories

Hypertensive Disease
Malignant Neoplasms
Vascular Lesions Affecting the Central Nervous System
Diabetes mellitus
Arteriosclerotic and Degenerative Heart Disease
Diseases of the Eye

Patients with these diagnoses accounted for only 26.8 per cent of the 613 admissions studied

Gallinger Municipal Hospital, Washington, D. C., Medical and Surgical Units—Patients admitted from Home Care Study Area—April 1, 1950 through June 30, 1950.

TABLE 4

No Medically Suitable Patients Were Found in the Following Diagnostic Categories

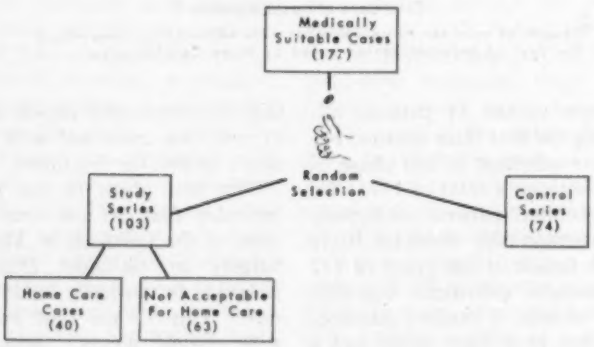
Pharyngitis and Tonsillitis	Psychoneurosis and Psychoses
Diseases of Genital Organs	Appendicitis
Pneumonia	Gonococcal Infection and other V.D.
Syphilis and its Sequelae	Common Cold and Sinusitis
Hernia of Abdominal Cavity	Noncancerous Diseases of Stomach
Boil, Abscess, Cellulitis, and other Skin Diseases	Diarrhea and Enteritis

Other Specified and Ill-Defined Diseases

Patients with these diagnoses accounted for 43.2 per cent of the 613 admissions studied

Gallinger Municipal Hospital, Washington, D. C., Medical and Surgical Units—Patients admitted from Home Care Study Area—April 1, 1950 through June 30, 1950.

FIGURE 2



of the patients who stayed in the hospital over 30 days, and almost two-thirds of those who stayed over 90 days, fell into this group who were medically suitable for home care. However, the Home Care Service could actually be given to little more than one-third of those qualifying on purely medical grounds, because of inadequacy of environmental factors in the remaining two-thirds. This is equivalent to a home care potential of but 2.1 per cent of all admissions—for both acute and long-term illness—to Medicine and Surgery at Gallinger Hospital.

The second phase of the study was concerned with the significance of home care in reducing hospital stay and costs of patient care (Figure 3). Accurate findings could not have been based on a simple comparison of the experience of the group which actually received home care with that of the entire control group, since obviously some patients in the control series—like those in the study series—would not have had acceptable home care plans made for them. Knowing what the total control group experience was, however, and assuming that the proportion of patients whose home situation was inappropriate would be identical in both series, we arrived by deduction at the experience of the home care counterpart in the con-

FIGURE 3

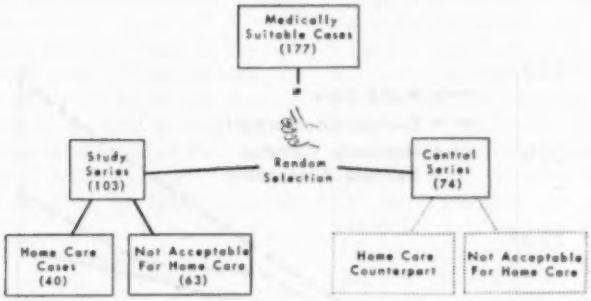


TABLE 5

An Average of 24 Hospital Days Per Patient Was Saved by Home Care

	Average Days of Hospitalization After Medical Suitability	
Study Group		
Given Home Care	17.2	
Not Acceptable	43.8	
Control Group	42.6	< Home Care Counterpart 40.8 Not Acceptable Counterpart 43.8

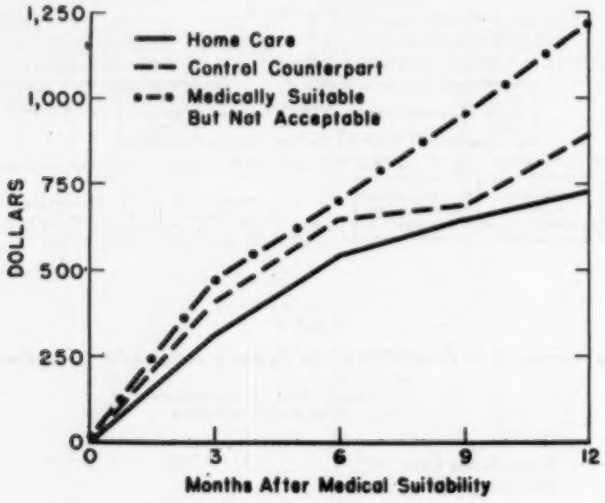
trol series. We were then able to compare the cost for home care patients with that for the home care counterpart in the control series.

Table 5, for example, shows the difference between the length of stay in the hospital for the home care patient and that for his counterpart in the control series. These periods were calculated in months from the day on which the home care physician indicated the patient's medical suitability for home care and included the period of all readmissions that any of the patients may have required during our observation. It will be noted from this graph that the home care counterpart in the control group stayed in the hospital an average of 40.8 days, or 24 days longer than the patient actually on home care, who stayed an average of 17.2 days. Although an average of 24 days of hospitalization per patient was saved by the use of the home care technic, the patients in the home care group required an average of 118 days of care in the home, using the special facilities which had been set up for that purpose.

Figure 4 presents, as accurately as we were able to calculate, the average cost to the community for medical care per patient given home care, compared with that for all services required by control patients. Monthly costs for the period the patient was in the study were figured from the day he was found to be medically suitable for home care. Daily costs for hospitalization at Gallinger were $13.50, and for home care service they were $2.70. Confining ourselves, for the moment, to the two lower curves on this chart, we note that the amount of saving due to home care varied, depending on the time when we viewed both patients. Certainly, while the home care patient was at home, and while his

FIGURE 4

Cumulative cost for care of average home care patient, control counterpart and not acceptable patient



counterpart in the control series remained in the hospital, significant savings did accrue.

However, the control patient also was discharged eventually from the hospital, either to his own home and outpatient care, or to a domiciliary facility. The cost of home care compared to these arrangements was not markedly different, and, therefore, after the initial expenditure for additional hospitalization of the control patients, the costs for the two groups paralleled each other. Remembering, of course, that this chart is based on the number of individuals actually surviving and followed for the length of time specified, we find that the costs for the home care patient on the service for nine months approximated those for his control counterpart. After this period, however, the costs of readmission to the hospital of some of the control patients and of domiciliary facilities for others made the costs again divergent. In general, there was a difference of about $100 in overall cost for the two groups of patients.

The consistently highest cost, indicated by the top curve on the chart, was for patients who could not be placed on home care for lack either of a suitable home or of persons at home to assume care. A great need is demonstrated for adequate home substitutes in those patients not now having adequate homes. The cost of providing a domiciliary facility is not nearly so great as the cost of keeping patients in hospitals while they are on waiting lists for transfer to domiciliary facilities.

It should be remembered also that in the cost figures presented, no allowance has been made for expenditures by the family for food, laundry, and other essentials of living. These are increased when an additional person (in this case, a sick individual) is placed in the home setting. This amount we have not been able to estimate. We know only that the same proportion of family units in

each of the categories with which we are concerned had been given public assistance.

The third and final phase of the Gallinger Study was concerned with the extent to which the home care program could conserve the total number of beds used by the patient-load of the Medical and Surgical Buildings.

As can be seen by Table 6, during the year 1950, there were approximately 7,500 patients admitted to the Medical and Surgical Buildings at Gallinger. According to our findings, 2.1 per cent of these admissions could have been given home care, and 24 days of hospitalization could have been saved for each of these patients. Thus we find that about 3,800 hospital days could have been saved by the use of such a service for all suitable patients. In terms of hospital bed space made available by the use of home care service, there would have been a total of 10 beds, or the equivalent of a 1.9 per cent annual increase in the 520 beds available in Medicine and Surgery.

TABLE 6

Increase in Available Beds Resulting from Home Care at Gallinger Municipal Hospital

2.1 per cent of 7,514 admissions = 158 patients given home care
158 × 24 = 3,792 days of hospitalization saved by home care
3,792/365 = 10 beds made available for entire year
10/520 × 100 = 1.9 per cent increase in available beds

The saving in hospital beds, like the saving in cost to the community, would be increased if a larger proportion of medically suitable patients had adequate homes or if domiciliary facilities were available. It should also be mentioned that a greater number of beds could be conserved if long-term patients medically suitable for home care constituted more than the 5.5 per cent of routine admissions that we experienced at Gallinger.

We must reiterate that this entire discussion has dealt with a study containing a small number of cases. It has also been concerned with a very specific kind of patient, needing a long-term service of a significantly broader nature than an outpatient department is designed to give. The District of Columbia has available a transportation service for those patients who need only outpatient services, but who have some difficulty in otherwise attending the scheduled sessions of this department of the hospital. We did not consider these patients. The District of Columbia Health Department also has a separate service for medical care in the home in acute illness, and patients using this service are not included in the present study.

The preceding report, then, has been an analysis of three significant features of a home care unit operating as an independent administrative unit for the care of long-term patients exclusively. The unit was set up in this way for study purposes, and it should not be thought of as the only—or even the most feasible—way to make home care services available to appropriate patients. Since we recognize that any medical care facility can occupy merely a small place in what may be termed a total medical care setting, we may view home care simply as a technic of supplying adjunctive services in the home. As described above, home care can, and probably should, be integrated administratively with similar technics for the care of acutely ill patients, thereby forming units occupying a broader place in the total medical care spectrum. It should receive consideration, not as a substitute for any other facility, not as an economy measure (because medical care does cost money)—but for what it is—a worth-while additional resource in total medical care which can be utilized effectively by some patients.

Experiences reported here are those of the hospital system of a great city in which an integrated plan of hospital and home care relieves, in some part, the intolerable overloading of municipal institutions. Revealing case records of repeated leaving and returning to hospital round out this symposium on home care.

Some Aspects of the Home Care Program Conducted by the New York City Department of Hospitals*

MARCUS D. KOGEL, M.D., F.A.P.H.A.

Commissioner, Department of Hospitals, New York, N. Y.

THIS presentation will deal only with two general aspects of the home care program conducted by the New York City Department of Hospitals; first, the effect of the program on the overcrowding of the hospitals of the department, and, second, some difficulties experienced by the hospitals in operating the program.

The term "home care" means different things to different people. In the Department of Hospitals it refers to a continuation of the patient's hospital care in his home—or in a boarding home or nursing home if he should have no home of his own. In this definition the stipulation is very properly implied that no patient is treated on a home care service who has not been thoroughly evaluated in a hospital. We use the term "hospital stay" to cover the complete period of care rendered a patient, including ward and home care episodes. When we say that a patient has been discharged, we refer to the final discharge of a patient, whether it be from the hospital or home care. A patient is transferred from the hospital to home care. He is retransferred from home care to the hospital, but he is discharged only when the period of care terminates definitely. A period of care may thus consist of a number of episodes in the wards and on home care.

The home care program of the department began operation in December of 1948 in five hospitals. From a census of 109 on January 1, 1949, it has grown steadily. There are currently 16 hospitals participating and on October 1, 1952, the home care census was nearly 2,000.

A total of nearly 350,000 home care days was rendered by the 16 hospitals during the first 6-month period of 1952. This means an average daily home care census of 1,907 patients.

During this same period, a total of over 2,170,000 ward days was rendered by these 16 hospitals. This adds up to an average daily total census of nearly 14,000. Incidentally, the average daily ward census in all departmental hospitals during this period was 20,238.

Since these 16 hospitals had a bed complement of 11,649, they were operating at an average ward occupancy rate of 101.3 per cent. If these 16 hospitals had to operate without home care services, they would have had an occupancy rate of 117.4 per cent.

* Presented before a Joint Session of the Conference of Health Council Work and the Health Officers, Medical Care, and Public Health Nursing Sections of the American Public Health Association at the Eightieth Annual Meeting in Cleveland, Ohio, October 21, 1952.

TABLE 1

Impact of Home Care Census on Ward Occupancy, Each Hospital, First Half Year, 1952

Hospital	Home Care Average Census	Wards		
		Average Census	Occupancy Rate	
			Actual	Avoided
All	1,907	11,927	101.3	117.4
Bellevue General	169	1,526	82.6	91.8
City	84	783	95.2	105.3
Coney Island	58	275	96.2	116.4
Cumberland	83	280	97.5	126.6
Fordham	125	441	106.5	136.7
Gouverneur	33	166	93.6	112.0
Greenpoint	83	264	94.0	123.5
Harlem	133	867	122.9	141.9
Kings County General	292	1,908	100.4	115.8
Lincoln	100	417	102.7	127.3
Metropolitan General	124	1,041	98.7	110.5
Morrisania	189	522	110.9	151.1
Queens General	216	645	98.9	132.0
Goldwater	83	1,764	119.9	125.5
Seton	66	419	93.7	108.4
Triboro	70	609	109.3	121.9

The difference between ward occupancy rates of 101 and 117 per cent is the most eloquent indication of what home care programs mean to a hospital system operating under the pressures of the Department of Hospitals (Table 1).

What has been the impact on some of the most crowded hospitals? The 471-bed Morrisania Hospital was operating, during the first 6 months of 1952, on an average daily ward census of 522, i.e., on an occupancy rate of 110.9 per cent. At the same time, the average home care census was 189. The home care service thus succeeded in preventing an occupancy rate of 151 per cent!

The 665-bed Queens General Hospital was operating during the same period on an average daily ward census of 645, i.e., on an occupancy rate of 98.9 per cent. At the same time, the average home care census was 216. This home care service succeeded in preventing an occupancy of 132 per cent!

The 1,890-bed Kings County General Hospital was operating during the same period with an average daily ward census of 1,908, i.e., on an occupancy rate of 100.4 per cent. At the same time, the average daily home care census was 292. This home care service succeeded in preventing an occupancy of 115.8 per cent!

It is of special interest that the newest link in the chain of home care services, the Harlem Hospital service, had a most encouraging experience. In view of the unfavorable housing facilities in the underprivileged neighborhood of this hospital, we were reluctant to start a Harlem Hospital Home Care Service. However, the appalling overcrowding of the wards of this hospital, which in 1949 had operated on an average occupancy of 140 per cent and during 1950 on an average occupancy of 131 per cent, motivated us to start the program on a trial basis. The service was initiated in June, 1950. After 6 months, the census had climbed to 92. During the first 6 months of 1952, the census averaged 133 patients. This service now ranks fifth among the 16 home care programs. By now, the ward occupancy in Harlem Hospital is down to 124 per cent, still a far cry from any acceptable standards, but quite an improvement over the intolerable situation in existence before the launching of the experiment.

The Harlem Hospital experience demonstrates that it is quite possible

to set up an effective home care service in any general hospital provided there is the will to do it and the dynamic leadership to guide it.

Eligibility for home care is determined by a combination of medical and socioeconomic factors. One of the decisive medical aspects is whether the patient no longer needs the whole gamut of medical facilities and services provided by a general care hospital; whether he can be adequately cared for by occasional medical supervision rather than constant medical attention, and by occasional nursing attendance rather than constant nursing care.

We are not particularly disturbed that the patient is slated for a long stretch of home care or that in the foreseeable future he will need attendance in a hospital ward. On the contrary, we intentionally include in our selection of desirable home care candidates patients who might require occasional retransfers to the wards. Acute exacerbation of a patient's chronic condition, recheck of a clinical condition, or revision of a medical regime are the most frequent reasons for "retransfers" of a patient to the hospital. An example is:

Mr. J. O., age 56, married, had a total of 4 experiences of hospitalization in the period of August 17, 1949, to May 22, 1952. Two of these experiences consisted of combined services on the ward and on home care.

First hospital stay: August 17, 1949, to October 4, 1949. Diagnosis: thyrotoxicosis with congestive heart disease.

Second hospital stay: Admitted December 31, 1949. Diagnosis: hypertensive cardiovascular disease with hyperthyroidism. After 18 days on the ward, he was transferred to home care service. After nine and one-half months of home care he was retransferred to the ward because of dyspnea. Three days later, patient was transferred back to home care, where he remained for six and one-half months, until his discharge.

Thus, in a 16-month period of "hospitalized" illness, the patient spent 3 weeks in the ward (18 days initially and 3 days intermediately) and over 15 months on home care.

Third hospital stay: July 2, 1951, to July 6, 1951. Diagnosis: hypertensive cardiovascular disease and Graves' disease.

Fourth hospital stay: Patient was admitted July 16, 1951, and died on May 22, 1952. During these 10 months of care, patient was on the ward 39 days and 255 days on home care; he experienced 5 episodes of ward and 4 episodes of home care service which lasted as follows:

Stay	*Days*
Ward	10
Home care	90
Ward	9
Home care	92
Ward	5
Home care	41
Ward	1
Home care	32
Ward	14

Each retransfer to the ward was necessitated by dyspnea and other acute symptoms.

Final diagnosis: hypertensive cardiovascular disease, congestive heart failure, anginal syndrome.

Another example is:

Mr. M. K., age 64, married, had been in Kings County General Hospital for the first 6 weeks of 1950 for a cardiac condition. He was discharged to a convalescent home.

History of present hospitalization: Patient was admitted on January 4, 1951, for an acute exacerbation (marked dyspnea) of his chronic cardiac condition. Investigation of the home situation revealed that the patient lived with his wife in a 3-room walk-up apartment.

After 5 days of ward care, patient was transferred to home care. After one week, patient had to be retransferred to

the ward because of vomiting and nausea. After 9 days of ward care, he was retransferred to home care on March 19, 1951.

Patient's condition in the following months showed a progressive deterioration mainly characterized by an increasing number of acute attacks of the chronic cardiac condition.

From the time of admission to the ward (January 4, 1951) to the date of the most recent retransfer to home care (June 11, 1952), i.e., a period of 524 days, the hospital care regime of this patient consisted of 8 episodes of ward stay totaling 50 days and 7 episodes of home care stay totaling 474 days.

Another example is:

Mr. A. G., age 67, widowed, who was admitted to Kings County General Hospital on December 27, 1950. Diagnosis: liver cirrhosis, ascites, chronic alcoholism, peripheral neuritis, and malnutrition. After a hospital stay of 49 days, the patient was transferred as a terminal case to home care.

Prior to his hospital admission, the patient had lived with a widowed daughter and her 10-year old son. The daughter was employed and would have had to give up her job if the patient were returned to the home. The patient, with the cooperation of his family, was placed in a convalescent home. Periodic returns to the hospital for paracentesis were anticipated.

The record shows that since his initial transfer to home care on February 14, 1951, until the date of his death, March 21, 1952, the patient was transferred back to the hospital for fluid removal 12 times. The days of hospital care for these separated hospital stays added up to 62. The accumulated stay on home care was 341 days. Had home care service not been provided, he would have had a hospital stay of 452 days, or about 15 months as against the nearly 4 months spent in the wards of Kings County Hospital.

It is obvious that cases with elaborate programs like the above are the exception rather than the rule. The histories should be considered illustrative rather than representative.

Patients in general hospitals are the main users of home care services. Thirteen of the 16 programs operated at present are associated with general hospitals. In addition, Goldwater Memorial Hospital (a chronic disease research hospital) and 2 tuberculosis hospitals (Triboro and Seton) are operating such services. Patients with chronic disease, however, make up the bulk of the cases. Of the total 667,095 home care days rendered in 1951, 595,554 were rendered to patients transferred to home care from the wards of general hospitals.

Patterns have been established for the continuous scrutiny of patients as to their medical and social eligibility for transfer to "ward home." The decisive factor is the suitability of the home. A home may be unsuitable because the sick person is completely rejected by the members of the family. Some people hold a bizarre concept of governmental responsibility in such matters and they consider it an imposition to be asked to assume any part of the burden for the care of their kith and kin.

A vexing difficulty with the home care service is selling it to the hospitals' attending staffs. We are particularly vulnerable since as a municipal facility we represent government. Many physicians are convinced that a home care program is a technic for introducing socialized medicine through the back door.

The house staff shortage has made it necessary to modify the home care program to the extent of cutting down on home visits by the house staff and substituting Welfare Department panel physicians or full-time physicians employed for the specific purpose of visiting home care cases.

Housekeeping service is a sore spot for

some hospitals. The only way to solve some situations is to pay members of the family to do the work. This may lead to abuses and must be carefully supervised.

Transportation is a constant source of difficulty and the finest coordination is necessary to make the maximum use of whatever vehicles are available. We find the station wagon the most useful type of conveyance for home care departments.

We are currently taking cautious steps toward the admission of selected categories of patients from the outpatient departments to home care. These patients would otherwise require a direct hospital admission. We are also experimenting with the use of "nursing homes" when patients have no suitable home of their own and we are studying a "boarding out" scheme for similar categories of patients.

The "home care" idea is exciting and challenging. It has given us in the Department of Hospitals a breathing spell until modernization and replacement programs are completed and it has made a permanent place for itself in the scheme of hospital operation.

Protein Foundation Created

The Protein Foundation has been incorporated in Massachusetts to hold and administer patents covering discoveries in the field of therapeutics and public health that have resulted from the work of Edwin J. Cohn, Ph.D., and his associates in the Harvard University Laboratory of Physical Chemistry Related to Medicine and Public Health. The foundation will administer such patents wholly in the public interest. The policy of Harvard University requires that no patent in the field of therapeutics or public health shall be taken out by a member of the university unless it is made available for the public benefit without profit to the inventor, the university, or the foundation.

Among the inventions arising out of the laboratory's work are processes now used as standard procedure in the fractionation of human blood, the preparation of gamma globulin, serum albumin, and Stable Plasma Protein Solution, biochemical procedures for preserving blood fractions, and biochemical equipment for collecting and processing blood.

The chairman of the foundation's trustees is Chester Barnard, chairman of the National Science Foundation and former president of the Rockefeller Foundation. Technical adviser to the foundation will be the nonprofit Commission on Plasma Fractionation and Related Processes of which Dr. Cohn is the chairman. This group of authorities on the preparation, control, and use of biologic preparations was organized in 1944 to assure continuance of the necessary quality controls and standards initiated during World War II.

Six essentials for a productive home care program are these: the total resources of a general hospital; substantial and coordinated community services; centralized administrative responsibility; integration of the various professional groups concerned; geographic limitation of patients served; and (not least) adequate financial support.

Domiciliary Medical Care and the Voluntary Teaching Hospital*†

HENRY J. BAKST, M.D.

Professor of Preventive Medicine, Boston University School of Medicine, and Director, Home Medical and Outpatient Services, Massachusetts Memorial Hospitals, Boston, Mass.

IN 1951 the interesting report to the Subcommittee on Medical Care, Committee on Administrative Practice of the American Public Health Association, by Terris and Kramer, [1, 4] on *General Medical Care Programs in Local Health Departments* was made necessary by the development of approval of health department administration of medical care programs for the needy by the Inter-Association Committee on Health, the Association of State and Territorial Health Officers, and the American Public Health Association.[2, 3] The recent and rapid growth of this pattern of medical care for the needy is reflected by the fact that of the 62 programs administered by local health departments which were studied, three originated in the post-Civil War period and almost all of the remainder were established after World War I.

Interest in such medical care programs also has been evidenced by medical educators. A portion of the program of the last two annual meetings of the Association of American Medical Colleges has been devoted to the educational aspects of certain medical care programs.[5, 6] Particular attention was focused on home care because of the opportunity which such activities provide for the development of a full comprehension of the physical, psychological, and social aspects of medical care.

The Boston University School of Medicine [7] and the Massachusetts Memorial Hospitals [8] have been concerned with the provision of medical care for the needy and medically needy for many years. A home medical care program was instituted as a joint activity of these two institutions in 1875. This program continued under the supervision of the Department of Medicine of the School of Medicine until 1948, when responsibility was transferred to the Department of Preventive Medicine. The professor of preventive medicine is director of both the Home Medical Service and the Outpatient Department and also a member of the medical staff of the hospital. This association of appointments allows a centralization of authority and control which makes pos-

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† This program is aided by a grant from the Commonwealth Fund.

sible a fairly intensive integration of services and continuity of medical care as well as a correlated field experience in medical practice.

The administrative and organizational aspects of this activity have already been described in considerable detail.[9, 12] Senior students in groups of four to six spend four weeks on the Home Medical Service. They provide medical care under the supervision of two full-time second- or third-year residents and the staff of the Department of Preventive Medicine. Consultations are available without charge from any of the special services of the Massachusetts Memorial Hospitals. Calls are received in the Home Medical Service office in the Outpatient Department daily from 8 a.m. to 3 p.m. A graduate nurse screens all calls, collects preliminary identifying data, determines patient eligibility, instructs students in nursing technics, and is responsible for equipment and supplies. Routine laboratory procedures are performed by students including bacteriology, which is supervised by a member of the Department of Microbiology. Pediatric conferences are held twice monthly. Psychosomatic and medical social conferences are held weekly.

Patients are hospitalized at the Massachusetts Memorial Hospitals, depending upon bed availability, or at the Boston City Hospital. All patients are referred to the Outpatient Department of the Massachusetts Memorial Hospitals, except those who are recipients of general relief. These are referred to the Outpatient Department of the Boston City Hospital. Emergency dental service is provided by the Dental Clinic of the Massachusetts Memorial Hospitals. Bedside nursing care is supplied by the Visiting Nurse Association of Boston. Students carry a minimum supply of simple medications which are provided by the hospital. Prescriptions may be filled at the hospital pharmacy. Housekeeping services and appliances are obtained from community agencies by the Social Service Department.

The service district is approximately one square mile in size. It contains a population of varied racial backgrounds numbering 50,000 and includes the greatest portion of the lowest economic stratum of the city. Home medical care is supplied on request to the needy population in this area which surrounds the hospital and medical school. This service provides care for about 5,000 patients annually. Teaching and organizational responsibilities make it difficult to handle acute emergency situations effectively. These are referred to the emergency ward of the Boston City Hospital. Since better than 95 per cent of the expectant mothers of the City of Boston are hospitalized for delivery, obstetrical experience in the home is largely accidental and very limited. Patients accepted for medical care by the Home Medical Service must meet the financial limitations established by the Hospital Council of Metropolitan Boston in respect to eligibility for admission as an outpatient. The upper limit of eligibility for a single person is $40 weekly. According to the preliminary data provided by the 1950 census, this standard makes 38 per cent of the population of Boston eligible for home and outpatient care. The eligible percentage in the service district is considerably higher.

There are some interesting data relative to the patient population of the Home Medical Service (Table 1). Over 48 per cent of the patients seen for the 12-month period from November, 1949, to October, 1950, were under 5 years of age, 65.5 per cent were under 10 years of age, and 13.4 per cent were over 45. Comparable figures for admissions to the Massachusetts Memorial Hospitals (a 400-bed general hospital including communicable disease) for the calendar year 1950 are 15.25 per cent under 5,

TABLE 1

Percentage of Patients in Specific Age Groups for the Home Medical, Inpatient, and Outpatient Services, Massachusetts Memorial Hospitals and Distribution of the Total Population of the City of Boston for 1950 for the Same Age Groups

	Massachusetts Memorial Hospitals			City of Boston
Years	Home Medical Service November, 1949–October, 1950	Outpatient 1950	Inpatient 1950	1950
Under 5	48.82	10.23	15.25*	8.0
5–9	16.66	6.66	4.51	6.87
10–14	3.5	5.41	2.2	5.97
15–24	6.45	21.9	12.37	15.89
25–34	5.87	19.3	17.01	15.65
35–44	5.26	11.9	12.8	13.8
45–64	7.84	16.7	22.66	23.48
65 and over	5.6	7.9	13.2	10.34
Median age—years	5.3	28.9	34.2	33.5

* 11.4 per cent newborn which if excluded raises the median age to 42.9 years

19.76 per cent under 10, and 35.86 per cent over 45. New admissions to the Outpatient Department for the same period indicate that 10.2 per cent were under 5, 16.89 per cent under 10, and 24.6 per cent over 45. The median age of the patient population on the Home Medical Service for the period noted was 5.3 years, for the Outpatient Department it was 28.9 years, and for inpatients it was 34.2 years. Exclusion of the newborn from this data raises the inpatient median age to 42.9 years. The median age for the population of the City of Boston for 1950 was 33.5 years. No specific conclusions as to the medical needs of each age group are being considered at this time. It is reasonable to assume, however, that the hospital, the Outpatient Department, and the home each reflect a somewhat different aspect of the distribution of the burden of disease in the community. Additional data along these lines from other medical care programs would be of considerable interest.

The economic status of patients for whom home care is provided is rather difficult to evaluate precisely (Table 2). Of the 15,173 home calls made in the 12-month period from April, 1950, to March, 1951, 64.58 per cent of the visits were made to medically needy individuals. These patients did not exceed the limit of income eligibility established by the Hospital Council of Metropolitan Boston and were not receiving financial assistance from any social agency; 35.42 per cent of the total number of visits were to individuals who were totally needy and were receiving financial assistance from a public welfare agency. Individuals in various categories of relief, such as, aid to dependent children, the totally and permanently disabled, and old age assistance, are enabled to meet the cost of medical care through a combination of federal, state, and local community participation. The cost of providing medical care for re-

TABLE 2

Percentage of Patients in Various Relief Categories, Home Medical Service, Massachusetts Memorial Hospitals, April, 1950, to March, 1951

Category	Per cent of Patients
Nonrelief	64.58
All Relief Groups	35.42
Total	100.00
Aid to Dependent Children	15.2
General Relief	11.8
Old Age Assistance	6.8
Veterans' Assistance	1.55
Aid to the Blind	0.07
Total	35.42

cipients of general relief is usually recognized as a local responsibility. According to the experience of the Home Medical Service, approximately one-third of the annual services are provided for individuals receiving financial assistance from a public welfare agency. Care for the medically needy, those not receiving financial assistance, is usually provided by those programs which are administered by local health departments. Nonofficial agencies, however, such as, the voluntary hospital, find it necessary to subsidize practically the entire cost of care for the medically needy. Since this group requires two-thirds of the annual services provided, the desirability of serious consideration of this problem is self-evident. It is unrealistic to depend on protracted support from private foundations in order to meet this need. That some form of acceptable socioeconomic action is essential is a point of view which cannot be avoided.

With the exception of those circumstances previously noted, the Home Medical Service makes a call to any patient who requests medical care if he cannot come to the Outpatient Department. Medical care is continued at home as long as it represents the most satisfactory mode of treatment insofar as the patient is concerned. With these limitations for the 12 month period from November, 1949, to October, 1950, 84.23 per cent of the patients seen by the Home Medical Service were treated at home, 8.83 per cent were referred to the Outpatient Department for further evaluation, and 6.94 per cent were admitted to the hospital. The services which are provided at home are essentially those which would be provided by a general practitioner or family doctor. It is believed, and has often been stated, that the general practitioner is qualified to care for 80–85 per cent of all patients.[10] This statement derives support from the Lee-Jones Study[11] and appears to be corroborated by the experience of this service.

One may justifiably show some concern as to the volume and extent of medical care required by the patient population of the Home Medical Service. A partial answer to this question is provided by the number of visits made per patient in various categories (Table 3).

TABLE 3

Number of Visits per Patient in Various Relief Categories, Home Medical Service, Massachusetts Memorial Hospitals, November, 1949, to October, 1950

Category	*Number of Home Visits per Patient*
Nonrelief	2.86
Aid to Dependent Children	3.1
Veterans' Assistance	4.0
General Relief	4.1
Old Age Assistance	5.6
All Patients	3.25

In the 12-month period from November, 1949, to October, 1950, each patient received 3.25 visits. This number does not appear to be excessive and is believed to compare favorably with the experience of other medical care activities. The age group and the type of illness, however, affect this number considerably. The medically needy population group represents 64.58 per cent of the patient load. Over 65 per cent of this group are less than 10 years of age. These patients averaged 2.86 home visits. Patients on old age assistance, however, all of whom are 65 years of age or more, received 5.6 visits.

Consideration of other health services emphasizes clearly the significance of age and prolonged illness in the provision of medical care. A review of experience with social service referral on the Home Medical Service for the first six months of 1950 indicates that the rate of referral to the Social Service Department is twice as frequent for patients with prolonged illness as it is for patients with short-term illness. During this same

period, if the group under age 20 and the group over age 40 are arbitrarily selected, the results are particularly striking. In the group below 20 years of age, the rate of referral to the Social Service Department is 13.7 per 1,000. In the age group over 40, the rate of referral is 153.8 per 1,000. The utilization of nursing service follows the pattern indicated by social service experience. Patients referred to the Visiting Nurse Association for bedside nursing care are overwhelmingly those suffering from prolonged illness. The average age of a group of random patients referred to the Visiting Nurse Association by the Home Medical Service is 53 years. If only those patients referred to the Visiting Nurse Association on more than one occasion are selected, the average age proves to be 60. It is clear, therefore, that even when dealing with a patient population which is strongly weighted in the direction of the younger age groups, the factors of increasing age and prolonged illness affect strikingly certain quantitative aspects of medical care.

Increasing and widespread interest in home care programs has raised the question of proper and desirable administrative relationships of such an activity. Experience has indicated that certain essential requirements of structure and organization should be included in order to provide acceptably complete and adequate service. These are:

1. The services and resources of a general hospital
2. Coordinated utilization of community resources
3. Centralized administrative responsibility
4. Integrated cooperation of professional personnel
5. Specific geographic limitation
6. Adequate financial support

It is reasonably clear that the quantitative and qualitative aspects of medical services provided by a home care program are to a large measure determined by the facilities and resources of the hospital with which such a program is associated. In fact, the establishment of a home care service without hospital resources would so sharply limit the extent of available equipment, facilities, and personnel as to reduce the program to a superficial level of circumscribed and questionable community value. The fact that a hospital participates in such a program broadens considerably the usual and accepted functions of such an institution. Under these circumstances, medical and hospital services extend beyond the walls of the institution to make a very real and significant contribution to the health of the community. Such a program becomes, in part, the nerve center and communications center of personal health services for the community area.

It is of the utmost importance that those resources which are available within a community be fully and adequately utilized. The extent to which completeness of health service is to be provided by a home care program is dependent upon the coordinated utilization of official and voluntary health and social agencies for the benefit of patient care. This goal is best attained by the assignment of social service personnel to specific responsibility in the home care program. Such a step insures not only consideration of the social, economic, and environmental factors which may be associated with illness but also the utilization of such diverse agencies as the Visiting Nurse Association, the Health Department, the Family Society, the Society for Prevention of Cruelty to Children, and, occasionally, the cooperation of local court officials.

Centralized administration with emphasis on continuity of care and unit records is essential not only for efficient functional activity of a home care program but also serves as a means of collecting and developing basic knowledge concerning many aspects of medical care

for the needy and medically needy. Such data as have already been presented require confirmation and supporting evidence in order to properly evaluate what appear to be significant implications in this area. It is expected that fundamental information of this type will soon be forthcoming from the Health Insurance Plan of Greater New York. An indication of the potentiality of voluntary prepaid medical care as a source of morbidity data has already been provided from this source.[13] Similar studies in respect to the needy and medically needy population are now being undertaken by the Home Medical Service.

In general, home care by its very nature, requires consideration of the patient as an individual in relation to his environmental milieu and as a social being. Medical care under these circumstances involves professional medical attention but also the coordination of the services of the visiting nurse, public health and school nurse, as well as the medical social worker. In fact, the physician, nurse, and medical social worker form a medical care team which together with the pharmacist, dietician, physiotherapist, occupational therapist, and special technicians make possible the provision of medical care of a comprehensive nature.

While in some instances a home care program may very well encompass an entire community, in larger metropolitan areas this is frequently neither feasible nor desirable. Participation by more than one hospital in the same community requires a reasonable delineation of geographical areas of responsibility or a chaotic situation results, in which patients from a limited area are distributed among home care programs stemming from several parent institutions. The value of coordination of responsibility in order to obtain an equitable distribution of services and effective utilization of personnel under these circumstances requires no additional emphasis. This is not intended to interfere with freedom of choice in the selection of the source of medical care by the patient. Centralized administrative responsibility must not be established at the cost of personal liberty.

Governmental relief agencies in which federal participation is a factor make specific provisions for meeting a major portion of the cost of medical care. In those areas in which local health departments administer medical care programs, additional financial support is obtained from the local government. To this extent medical care for the needy is supported by tax funds. While these funds may not meet the full cost of providing medical care, a certain portion of this burden is being defrayed. The balance of the cost is met by charitable contributions, the use of endowment funds by voluntary agencies, and, in some instances, by grants from private foundations. However, the problem of medical care for the needy in our experience represents approximately one-third of the problem since about two-thirds of the patient load consists of individuals who are able to provide for ordinary day-to-day needs but who cannot meet the cost of medical care, the so-called medically indigent. Medical care for this group is being provided by the same organization as that for the totally indigent, but the financing of the care of the medically needy remains an unsolved problem. The definition of medical indigency is not one on which universal agreement may be obtained. In some quarters, the necessity for organization for the provision of medical care for this group has been sharply questioned. It is entirely possible that additional information in respect to the cost and volume of services required by this group may lead to a reasonable and acceptable plan for social action.

The use of outpatient facilities in the

process of medical education has been a relatively common practice for many years. Home care programs have been adapted for this purpose for a much shorter period of time. Further development in this direction will be delayed by certain essential and preliminary steps necessary to provide service and educational facilities of the same quality for homebound and outpatients as are usually available in most teaching hospitals on the wards. This will require additional financial support, obtainable only with great difficulty from existing medical school budgets and funds available to voluntary hospitals. Programs in this direction, therefore, must still be tentative until the excellence of example is possible.[6]

In summary, some of the medical care aspects of a domiciliary program as a function of a voluntary hospital have been presented. Of particular interest are the altered position of the hospital in relation to the community as a result of this activity and the position which the home care program occupies in meeting community health needs. What are considered to be the essential organizational and administrative requisites of such a program also have been discussed. The need for differentiation between total indigency and medical indigency and the problem of financing the cost of medical care for the latter group have been given particular attention. Finally, it is evident that the services provided by a home care program must be shaped to meet the particular needs of a given community. It is hardly possible that any single pattern will be universally applicable.

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Some home care programs seem to have been instigated by hospitals in search of relief. Here the city health agency—long in the business of caring for the indigent sick—took the initiative in proposing and undertaking an integrated plan of hospital-and-home care, the better to meet its obligations to its sick.

The Richmond Home Medical Care Program*

EDWARD M. HOLMES, JR., M.D., M.P.H., F.A.P.H.A., KINLOCH NELSON, M.D., AND CHARLES L. HARPER, JR., M.S.P.H.

Director of Public Health, City of Richmond, and Professor of Community Medicine, Medical College of Virginia; Professor of Clinical Medicine, Clinical Director of Home Care Service, and Director of Continuation Medicine, Medical College of Virginia; and Administrative Assistant of Medical Aid Bureau, Department of Public Health, City of Richmond, Va.

THE Richmond Department of Public Health (since it came into being in 1909) has been charged with the responsibility of providing medical care for the indigent. In the interval from 1921 to 1941 this department became a Bureau of Public Health under the Welfare Department. In the latter year it was re-established as an independent department. Under both systems it conducted a physicians home visiting service as a part of its over-all medical care program.

In the summer of 1947 a series of incidents suggesting inadequacies in the quality of this visiting service caused the staff to re-evaluate it. Many inherent weaknesses were revealed. Spot checking of the records showed them to be sketchy at best. There was no continuity between the patient's home and hospital or outpatient care. Follow-up visits were not made routinely but only when requested by a member of the sick person's family. Frequently such return visits were initiated by nurses or social workers. Laboratory service was not provided. Payment for drugs on city indigent prescriptions was limited to 25 cents of the purchase price. There was no medical supervision of the physicians working in this service. As a consequence, the service was of poor quality. The long-standing cliché that these doctors were overpaid for what they did and underpaid for what they were expected to do was very true of the Richmond program.

As a result of this informal review a study of similar programs in other cities of comparable populations was undertaken. Seventeen such cities were surveyed by questionnaire. The information so obtained seemed of doubtful value for it was obvious that very little was being done to provide medical care for the indigent on a systematic and economical basis. It became apparent that home care in Richmond was

* Presented before a Joint Session of the Conference of Health Council Work and the Health Officers, Medical Care, and Public Health Nursing Sections of the American Public Health Association at the Eightieth Annual Meeting in Cleveland, Ohio, October 21, 1952.

neither better nor worse than that provided elsewhere. These studies convinced the directors that a community-wide survey was necessary if the city was to be stimulated to support a comprehensive program.

In the fall of 1947 the Health Division of the Richmond Area Community Council (one of the oldest councils of social agencies in America) was asked to study the problem and to make recommendations for an adequate service. A committee was appointed and, after an intensive period of study, made the following recommendations:

1. That the city abandon the use of the six part-time physicians.
2. That it establish within the Medical College of Virginia three residencies in general practice, and that these residents work under faculty preceptors.
3. That a general practice clinic, to serve as a family doctor's office, be established within the Admitting Clinic of the Medical College to be staffed by these residents and the faculty preceptors.
4. That the hospitalization and outpatient clinic program for the indigent be coordinated with the Home Care Service under a qualified director, in order that continuity of care be assured.

The new plan was designed to provide medical care of high quality through a program which would insure continuity of home, ambulatory, and hospital care. It was considered unique in that the service would function administratively under the Health Department, but would be closely integrated with the Medical College.

These recommendations were immediately acted upon by the Board of Health and transmitted to the Richmond Academy of Medicine, where they were heartily endorsed, and an immediate inauguration of the plan was urged. With the approval of the Board of Health, the Academy of Medicine, and the Board of the Richmond Area Community Council, the Health Department referred the program to the City Council, who appropriated additional funds and reallocated funds currently being used for the city poor physician system, in order that the new service could get started.

With the approval of these groups definitive plans were begun to inaugurate the new program. Appropriate arrangements were made with volunteer agencies and the Medical College whereby auxiliary nursing, laboratory, housekeeping, and rehabilitation services would be provided. Unfortunately, staffing difficulties prevented an immediate start.

In the early winter of 1948 representatives of the Commonwealth Fund, on a visit to Richmond, became interested in the plan and invited the director of the Health Department to send them a narrative review of the program, after which it was agreed that the city funds were not quite adequate and that a grant from the Commonwealth Fund could be arranged.

Recognizing the need for sufficient, well qualified personnel and that the program would be a demonstration of community planning in the field of medical care, it was presented to the Commonwealth Fund as a request for a research grant to assist in financing during a demonstration period. When the grant was made, three objectives were outlined:

1. To demonstrate that medical care of high quality, giving continuity of service between home, clinic, and hospital could be provided by a public health agency to the indigent and medically indigent under a coordinated plan in cooperation with a medical college.
2. That the faculty, residents, interns, and students of the Medical College could be made aware of the problems of a home medical care service and the social aspects of the practice of medicine.
3. That in time, data might be collected which would be valuable from the research point of view, on the problems of home medical service.

The program was begun on April 1, 1949. After getting off to the disappointing and turbulent start usually

found in new projects, it gradually settled down to a smoothly functioning unit. It was not intended that medical students be assigned to the program during the first year. However, this decision was changed and they were so assigned on December 1, 1949. Their enthusiasm and interest was immediate and great.

The medical staff consisted of a Clinical Director who had the faculty rank of Professor of Clinical Medicine, and two preceptors, or consultants as they have been called, from the faculty of the Department of Medicine. Three residents from the staff of the Medical College Hospitals were assigned on a two-month rotation basis. The students spent two weeks on this service as a part of their medical service during their senior year.

A well qualified medical social worker was employed as a consultant to the program. Since the beginning this person has been responsible for the development of relationships with community agencies, consultation with staff and students, and teaching duties. She also supervised the other medical social workers of the program and coordinated the services of the public health nurses.

While the committee appointed by the Richmond Area Community Council had been studying the Home Care Service, another committee of this council was studying the facilities for institutional care of the chronically ill. This study revealed a severe shortage of beds for this purpose; that the turnover was very slow, and that the majority of beds was not accessible to the indigent and medically indigent group due to cost. Upon the recommendation of this committee and in order to make the best possible use of available funds for hospital care, the Health Department reallocated its appropriations, effective July, 1950. In addition to acute hospitalization provided under contract with the Medical College of Virginia, the reallocation provided convalescent care in two general hospitals (one for white patients, the other for Negro) and for care of terminal and chronically ill patients in approved nursing homes. Contractual agreements were effected with the above institutions at $7.00 and $2.50 rates per day. It was believed that by close supervision at the Medical College Hospitals, and through discharge planning, it would be possible to transfer patients to chronic and convalescent facilities, or to the Home Service, with considerable saving in funds.

The plan also stipulated that patients, when their condition permitted, be admitted directly to these lesser facilities. Three objectives were thus cited for the hospitalization program:

1. More effective use would be made of existing facilities. Formerly, the department had given lump-sum subsidy grants to four local hospitals, without benefit of administrative control of the use of these funds. With contractual arrangements, control of funds could be maintained and patient care could be integrated with other phases of the over-all medical care program.
2. The change would assure patient care in the facility most suited to meet the needs as determined by the patient's medical findings.
3. More effective use would be made of available funds, since the per diem rate in combined convalescent and chronic facilities is 40 per cent less than that for hospitalization in the Medical College Hospitals.

Later an additional part-time physician from the Medical Department of the College was employed to investigate the status of the patients hospitalized in the Medical College Hospitals with an eye to expediting their removal to more economical surroundings and to follow-up the patients hospitalized by the program elsewhere. In order to provide further continuity of observation and care of the patients, this physician attended the regular case review conferences.

In 1950, the City Council appropriated $25,000 for a dental care program

based on a recommendation of another committee appointed by the Health Division, Richmond Area Community Council. With the addition of this service, the provision of complete care of the indigent and medically indigent was achieved.

Auxiliary services were used extensively to provide adequate home care for the patients. Arrangements were made early in the program whereby the Instructive Visiting Nurses Association gave nursing care. In the last year approximately 3,500 nursing visits were made by this agency. In this period the Family Service Society provided 10,755 hours of housekeeping service. The Sick Room Loan Chest, a Community Chest agency, furnished on a contract basis hospital beds, wheel chairs, crutches, etc., upon prescription by the attending physicians.

Early in the program it became apparent that many of the patients needed rehabilitation. Accordingly, plans were worked out whereby the Department of Physical Medicine at the Medical College and the State Department of Education, Rehabilitation Division, would provide these services. At present the Physical Medicine Department is providing evaluators and therapists. With the addition of these services, the program is considered to be well rounded, providing all the basic needs for adequate home care.

In addition to the hospital facilities and auxiliary services enumerated above, all of which are essential to the provision of coordinated medical care in which continuity is believed to be of the utmost importance, quality of care in this program has been maintained through its relationship with the teaching institution. It is well established in American medicine that if you want excellent medical care the best place to get it is on a teaching service. This precept is generally accepted as the students are well supervised by qualified physicians and their work is thorough. Coupled with these attributes is an intangible quality which, though difficult to describe, is manifested in many ways, namely, the eagerness of the student for the new experience of actually being in charge of a patient in his home environment. They report that the experience gained on this service is invaluable. Many state that it is their first chance to assume responsibility; others state that it is their first opportunity to see the prosaic in medicine. All of this is largely due to the fact that the student is encouraged to assume the role of a family doctor and, more importantly, he gets a feeling of responsibility for the management not only of the medical aspects of the case, but also for the social and environmental factors concerned. There is no doubt in our minds that student participation is excellent insurance for the preservation of quality in medical care.

While on this service students and residents have become acutely aware of the social and economic factors involved in the practice of medicine. Through the daily conferences with the preceptors, social workers, and nurses they have gained a new perspective. By the time he has completed his assignment on home care, the student has had many opportunities to see the influence of adverse social conditions on his plans for medical treatment.

Weekly one-hour conferences are held for the discussion of the cases already seen, especially those selected as illustrating some problem of medical or social care. These conferences are attended by all members of the program, representatives of the various agencies concerned with these patients, and either the director or the assistant director of the Health Department. Cases are presented by the students or residents and freely discussed by all. In addition, the director of the Health Department, who is also professor of community

medicine in the Medical College, conducts a weekly seminar in which the public health aspects of the patients actually seen by the students are discussed.

In the spring of 1950 the effort to develop residencies in general practice evaporated as too few of the graduates were willing to take a planned two-year hospital service for this purpose. With the cooperation of the professor of medicine it was possible to rotate two junior assistant residents from the medical service through the program for periods of 10 weeks, and the students were assigned to this service for 3 weeks instead of 2.

In the year July, 1950, to July, 1951, 9,147 calls were made on 3,001 patients, an average of something over three visits per patient. A study of the latter 6 months of the period showed that, by diagnosis, the cases fell roughly into 13 groups: acute upper respiratory infections 40 per cent, influenza and pneumonia 8 per cent, measles 13 per cent, mumps 4 per cent, diarrhea and enteritis 2 per cent, tuberculosis 3 per cent, diseases of childbirth and puerperium 4 per cent, diabetes 2 per cent, heart disease 10 per cent, intracranial lesions (chiefly vascular) 4 per cent, allergic condition 3 per cent, malignant neoplasms 3 per cent, and accidents 4 per cent.

Last year (July 1, 1951, through June 30, 1952) 9,674 visits were made on 4,006 patients, an average of 2.4 visits per patient. This was an increase of almost one visit per patient over the old district physician arrangement. A study of the period from March 17 through April 3, 1952, showed that the 8 students, working in pairs, who were assigned to the service at that time, saw 85 new patients and made 86 calls on old patients with a new problem, a total of 171 patients who received 571 visits, an average of 8 visits per day by each pair of students. In addition, they were making calls on chronically ill people who are seen more or less regularly every week or two. As a sample, while on the service, in four weeks, one team of students saw 11 patients with acute upper respiratory infections; 6 with measles; 3 with lobar pneumonia; 3 with bronchopneumonia; 1 with diabetes mellitus; 4 with cerebral hemorrhage; 1 with heart failure; 1 with gastroenteritis; 2 with pulmonary tuberculosis; 3 with acute salpingitis; 1 dying with cancer; and a considerable number of other conditions.

Many questions have been asked with reference to the cost of the program. Visitors want to know whether or not the program is economical. This can only be answered by giving a concise review of the appropriations made for medical care in Richmond. The city's budget for its entire medical care program, which includes acute hospitalization, chronic care, nursing home care, dental care, outpatient department care, and 80 per cent of the cost of the home care program is $350,600. The cost of the Home Care Program per se is $82,501. This latter budget item was agreed to by the city and the college after conferences in which it was brought out that the city was responsible for the actual provision of medical care and that the college was responsible only for that part of the program concerned with the teaching of students. After careful analysis, the following formula was arrived at: city, 80 per cent, college, 20 per cent. Actually, the per capita cost for this well coordinated medical care program is considered to be extremely low. For the current year the amount budgeted is $1.52 per person. The per capita cost of the Home Care Service is 36 cents, while the cost of home care for the welfare population served during the past year was estimated as being $17.33 per case. The cost per visit during this period was $4.41. Comparing this latter figure with the figure given for the city poor physi-

cian system in the year 1949, at which time the cost was $4.59 for the mere visit of a physician without the auxiliary aids, we believe that the program is economical.

Further analysis of Richmond's medical care program shows that the inauguration of an efficient Home Care Service and the contractual arrangements made with chronic disease, convalescent and nursing home facilities are the two major reasons why the Department of Health was able to function within essentially the same amount of money and yet give both a greater range and a greater volume of service. In the year 1948–1949 the city provided 18,925 hospital days. In the past year the city, by using the appropriate facility for each individual case, was able to provide 36,100 days of inpatient care for essentially the same amount of money. This is not only economical from the monetary viewpoint but is vital to the community in that we have been able to provide care for the chronically ill who previously were not admitted by the government as a responsibility.

The economy in the Richmond program is safeguarded in many ways. First, the admission rate to acute hospitals is held down through the use of home care and other institutional facilities. Further, with a coordinated nursing and social casework program, patients come to the attention of the program in the early stages of illness, which in turn make possible early diagnosis and treatment resulting in shorter episodes of illness. In addition, the hospital stay is often shortened by early discharge planning and transfer to home care or to less expensive convalescent and nursing facilities. A member of the medical care staff serves as a coordinator and is responsible for follow-up of cases accepted for treatment in all inpatient facilities. By making ward rounds, discussing cases with residents and other house staff, he is able to suggest transfer when it becomes medically feasible. By participating in discharge planning, we have learned that excessive hospitalization can be avoided, particularly when the desire to keep an interesting patient is prevalent, as is true in all teaching institutions. This phase has been materially improved by the infiltration of former home care students and residents into the house staff. Their home care experience has made them aware of the objectives of the total program, the availability of other resources, and the over-all importance of early discharge. The effectiveness of a systematic attempt to control hospital stay is reflected in the reduction of 1,794 days of acute care between 1949 and 1952, while the same number of patients received this care.

On June 20, 1952, after three years, the Health Department and the Medical College were able to report to the Commonwealth Fund that the project was successful and that the two institutions would jointly assume responsibility for conducting it. In taking over, both agencies agreed that the program would be continued with the same staff. In these three years many changes have been made and the next few years will probably see many more.

In conclusion, the following observations seem justified:

1. The cooperative effort of the Richmond Health Department and the Medical College of Virginia provides medical service of considerable continuity and at a reasonable cost for the indigent and medically indigent. The service begins with the onset of illness and continues to restoration to economic usefulness, or throughout chronic illness to death.

2. (a) Medical students, house officers, and physicians are afforded a heretofore unknown opportunity to see patients in surroundings and under the circumstances of illness as it is met by general practitioners, which many of them will later become. Experience is

gained in the observation and care of patients with everyday problems as contrasted with the obscure diseases customarily seen on teaching wards and in many teaching clinics. It is suggested that such programs may overcome certain of the marked differences between medical training and actual practice.

(b) Students have the opportunity to see how one community attempts to solve the illness problems of this group of society. Since it appears likely that similar groups exist everywhere, these young men will be better equipped to participate in such efforts in their own communities.

(c) Younger physicians see that patients cannot be treated as so many cases of anything, a fact very clear indeed to any practitioner; on the other hand, it becomes obvious that the doctor must consider all facets of the individual's family and social status as well as the illness itself. They see many "old crocks" change into pathetic old men with very difficult, but perhaps soluble problems.

(d) Public health or community medicine as a part of the curriculum is presented to the students more forcibly and in a more interesting fashion when discussed over patients who are at that time under the medical care of these same students.

3. The high quality of medical care afforded the indigent and medically indigent in Richmond has been accomplished at a reasonable expense to the taxpayer. This has been achieved by coordinating the activities of the many agencies involved, by utilizing the available resources most effectively, and by maintaining a close administrative control.

Antibiotics Added to Food

The Food and Drug Administration, in reply to numerous requests concerning the use of antibiotic drugs as food preservatives, has published the following statement which appears in the *Federal Register*, February 25, 1953; 18 F. R. 1077:

Careful consideration has been given to this question and the conclusion has been reached that such use constitutes a public health hazard. Consumption of food so treated may cause sensitization of the consumer to such antibiotics and may result in the emergence of strains of pathogenic microorganisms resistant to these drugs.

The presence of antibiotic drugs in foods intended for human consumption, or the direct or indirect addition of such drugs to such foods, may be deemed an adulteration within the meaning of section 402 of the Federal Food, Drug, and Cosmetic Act (sec. 402, 52 Stat. 1046; 21 U. S. C. 342).

Discussion*

Home Care Programs

ROSE DELUCA, R.N.

Administrative Assistant, Visiting Nurse Service of New York, New York, N. Y.

THE term "Home Care" has become familiar and fashionable, but it means different things to different people.

To the public health nurse and to the private physician, giving care in the home has been familiar and usual for a long time.

More recently hospital personnel have used the term for a program in which the hospital assumes responsibility for continuing the care needed after the patient leaves the hospital. When the hospital provides, or pays for all the needed service the term "home transfer" may be more descriptive of their particular program. As health departments and others assume responsibility for the administration of medical care for selected groups, care in the home may or may not be associated with hospitalization.

Visiting nurse organizations have for a long time talked and written about home nursing service. Perhaps we have at last found in "Home Care," a term which can be used in all programs, the desirable connotation of comprehensive care, and this is good reason to make this term popular.

To provide comprehensive care in the home, the principle of teamwork has been accepted. Again this term may not mean the same thing to all who use it. To bring about desirable results, I believe it should include teamwork at the beginning or planning stage of the program, teamwork in the establishment of policies and procedures, and teamwork in the periodic review and evaluation of the program. When a particular program is new, it may seem unnecessary to have conferences, to write out detailed policies and procedures, and to seek understanding and approval from representatives of all the professional personnel who will give service. Experience tells us, however, that later much time, effort, and misunderstanding is saved if such attention is given to these administrative aspects of teamwork. To paraphrase, "if the administrator takes this longest way around to launch a program, those who carry out the service will find a sweeter way to home care."

With regard to the financial aspects of home care programs, it seems pertinent to suggest that those who are analyzing costs, should, if possible, agree upon some standard or generally accepted methods.

I raise the question also about the extent to which availability of hospital and other facilities influence home care programs regardless of the economy of such programs. At the Visiting Nurse Service of New York we receive many letters asking about the methods and procedures we have used in the agreements and contracts we have for pro-

* Presented before a Joint Session of the Conference of Health Council Work and the Health Officers, Medical Care and Public Health Nursing Sections of the American Public Health Association at the Eightieth Annual Meeting in Cleveland, Ohio, October 21, 1952.

viding nursing service in home care programs. Many of these letters from different parts of the country say, in effect, "there is not much interest here in starting a home care program because our hospitals are not crowded." Such an attitude is not found in all localities, as is illustrated by the description of the program in Boston. It is of particular interest to review the educators' interest in comprehensive medical care given in the home "where people live."

The final point I would like to discuss concerns the services which have been listed in the previous papers. The important service I want to add to the list has been implied but should be specifically stated, namely, teaching the family to give care to the person who is ill at home. This is really the keynote because in order to keep the patient at home, some member of the family must know how to give nursing care during the time professional workers are not in the home. Experience tells us that the family can carry out many nursing procedures, if properly and skillfully instructed, but this is teaching not only of certain technics, but perhaps more important, of providing sufficient explanation to give confidence to nonprofessional persons so that they can give care safely and adequately. Teaching the family to assume responsibility for the care of the patient at home is a service given by the visiting nurse which is of importance equal to the service usually listed as bedside care.

Health Manpower Fully Documented

In order to meet its responsibilities as a coordinator of information on the various categories of medical man power, the Public Health Service is preparing a comprehensive source book on health manpower. The preliminary report, Section 1, Physicians, has already been published.

Section 2 on Nurses is in press, Section 3 on Medical Social Workers, will shortly be. Two further monographs are scheduled for publication in 1953, based on 1950 census findings. Section 4 will list by county the number of persons engaged in each of 16 health occupations. Section 5 will present tabulations by state on the number employed in hospitals and other health or medical facilities.

The analyses of Section 1 on Physicians are based on data found in the *1950 American Medical Directory* of the American Medical Association. There is a set of 66 tables and an extensive bibliography giving almost any facts one might want to know about physicians—number of medical schools and the number of their graduates, number of specialists and diplomates, income, urban-rural distribution, patient load, group practice, among others.

Nearly 2,500 physicians were found employed full time in state and local health departments and in health activities of other official state agencies, nearly one-fourth of them in state health departments, less than one-sixth in other official state agencies, and more than 60 per cent in local health departments.

Health Manpower Source Book, Section 1, Physicians—Government Printing Office, Washington 25, D. C., 40¢.

If, as alleged by some, health education pervades practically all the areas of present day public health administration, then we are educators all and so should be curious about what our colleagues in the new Adult Education Association plan to do. The tripartite program is outlined here.

Cooperation Between the Adult Education Association of the U.S.A. and the American Public Health Association*

FERN LONG

Supervisor, Adult Education Department, Cleveland Public Library, Cleveland, Ohio

THE concept of adult education is not new. Long ago Plato outlined in his *Republic* the ideal education for a man, and according to his plan at the age of 35 the man returns to the academy for the study of philosophy. This continues until the age of 50, when his formal education is completed and he is ready to make his real contribution to the world. This kind of training has always been followed by a few people in every age, and it is not what we are talking about when we speak of adult education today.

The modern idea of adult education is a product of democracy. It was in the eighteenth century, when the great concept of all men as free and equal beings first was voiced, that the doctrine of the perfectibility of man was first expressed. This belief in man's own ability to perfect himself and the society around him is the soil in which this plant, adult education, has had its growth. In which countries has it flourished the most? In England, the Scandinavian nations, and in our own—the three parts of the world where democracy has had its fullest and freest flowering.

At this point it would be well to attempt a definition of that phrase which sounds so self-explanatory—adult education. The words really mean exactly what they say—education for mature people who have stepped out of the institutionalized setting of school and onto the stage of life. The question of meaning does not center on the word *adult,* but rather on the word *education* —and many a controversy has developed over the exact meaning of the word "education." There are many who believe that it should be accepted in its broadest sense, and include vocational education, liberal education, and even the process which can go on between film, television, or radio and a listener or viewer.

The campaigns engaged in by some of the health organizations of this country are good examples of one type of adult education. The campaigns of the tuberculosis associations, for example, have been an unremitting effort to educate the citizenry in one very important area—the same with the Cancer Society, the Heart Society, the March of Dimes, etc.

* Presented before the Public Health Education Section of the American Public Health Association at the Eightieth Annual Meeting in Cleveland, Ohio, October 22, 1952.

Even though there has been disagreement from time to time on the exact meaning of words, there has been complete agreement about the ends to which the processes of adult education are directed. The over-all objective is very simply stated—the development of a citizen body of free men and women, alert to the issues of this time in which we live, informed, thinking, questioning, relating thought to action and action to thought. Indeed, a democracy can not be viable without that kind of citizenry. Although the objective may be so simply stated, the achievement of that objective is far from simple.

This statement concerning ends cannot be considered outside the context of our world, and considered in that context it takes on momentous significance. I do not have to tell you the type of world in which we live. Politically divided, criss-crossed with thousands of misunderstandings and misapprehensions, most of its surface ridden with poverty, hunger, disease, and fear —living in the shadow of a mushroom-shaped cloud and dreaming of flights to the moon and beyond—this is much of our world today. Much of it, I say, but not all of it. There are powers of light combating the powers of darkness, as there have always been, with the degree of strength on either side varying from age to age.

The American Public Health Association and the one I represent are certainly very much on the side of those powers of light and what we are considering are the ways in which these two organizations can cooperate to the end of better achieving our objectives, which are largely mutually shared objectives.

Let me present a brief description of the story of the Adult Education Association—which is only a little over a year and a half old. Before May, 1951, there were two major organizations in the United States concerned with adult education. One of them was the American Association for Adult Education, the other was the Department of Adult Education of the National Education Association. In 1946, at a meeting in Detroit, the first steps were taken to create a single national organization, and finally at a meeting in Columbus in May, 1951, the final action in that direction was taken and a new organization, the Adult Education Association of the United States of America, rose out of the ashes of the two old ones.

There was—and there is—a constant effort being made to make this new organization broadly representative, in every sense of the word. For example, there is a geographical distribution of the centers of administration. The publications office is in Chicago, the membership office is in Washington, the area projects office is in Cleveland, and the Council of National Organizations is in New York. In other directions, representatives of special interest groups within the broad field of adult education are fully included on the executive committee, in the officer body, in the special committees set up in areas of interest, such as international affairs, the aging population, labor education, parent education, public health education, etc.

A significant development of the adult education movement in recent years has been the great broadening of its inclusiveness. There was a time not so very long ago when the concept of adult education was pretty well limited to what went on in the classroom. That idea has been greatly expanded to include certain phases of library and museum work, the programs of PTA's, men's and women's organizations of many different kinds, citizens' groups, religious and interfaith organizations, union groups—and most certainly health and welfare organizations similar to the APHA. The program of the Adult Education Association is far-reaching, centering largely around its publications

project, its area organization project, the Council of National Organizations, and the ever-broadening work of its special committees. Its publications include first of all the new magazine, *Adult Leadership*; a small, more specialized journal, *Adult Education*, and a *Newsletter*. The continuing work of the committees refreshes, stimulates, and modifies the over-all program of the organization.

It seems to me that no description of the Adult Education Association would be complete without mention of the Fund for Adult Education of the Ford Foundation. Their grants have made possible the publication of *Adult Leadership* and the existence of the area organization and Council of National Organizations projects which I shall now describe.

This leads us directly to the question to which the answer is very important, and that is, at what points can cooperation be established, or intensified, between your Association and ours? First of all, in order not to be considering that question in a vacuum—what will be accomplished by such cooperation?

I am not going to answer that second question in any detail, but only say that the basic thing to be achieved by cooperation is interpenetration of knowledge and information, both processes which effect a broadening of the base of any educational operation. Also, it is necessary to stress the fact that closer cooperation between the Adult Education Association and any agency means a two-way process which is bound to be of benefit to both.

I shall simply list a few of the ways which I believe may establish an even closer liaison between us, for there already is some.

First, I am going to mention individual membership and individual participation. No other organization I know places so much emphasis on the involvement in activity of a high percentage of its members. I have seen national organizations like my own—the American Library Association—encourage participation and membership in the Adult Education Association, to the mutual advantage of each. An unorganized group, but one with a high interest, has numerous representatives in the Adult Education Association—I am thinking of those interested in the older person—and this means the spread of activity for older people all over the country. It is increasingly recognized that the Adult Education Association offers a common ground for everyone interested in any phase of adult education, and the existence of such common ground for cross-fertilization is almost bound to result in new growth, just as the crossing of strains in plants produces new and often more fruitful development.

I mentioned earlier the assistance which two special projects of the Adult Education Association have received from the Fund for Adult Education. The one which is of most concern to an organization such as the APHA is the Council of National Organizations. This council is composed of a group of representatives of national organizations, including the APHA, brought together periodically for certain special objectives.

First of all, this council offers the possibility of being a clearing house of information, a medium for the exchange of ideas, materials and methods. This exchange will be effected through a newsletter which will contain material of common interest and common benefit to the various organizations involved. Periodically, the opportunity will be given member organizations to present a packet of materials which they have created and found useful, for the benefit of other members. Each member of the council will be placed on the mailing list of all the other organizations involved.

Yearly planning and exchange meetings are projected, and an APHA representative will have the opportunity to participate in them. This larger group then makes recommendations to the planning committee of the Council of National Organizations. This committee, incidentally, is elected by the council, and its function is to translate into action recommendations made by the council.

A long established organization such as the APHA has a great deal to contribute in the way of sharing with others the know-how that has been developed over the years. All of us who have anything at all to do with adult education have a great respect for the educational job that the Association has done and is doing.

Another project I have already mentioned briefly is the area project. The Fund for Adult Education made a grant to the Adult Education Association for a term of three years to develop adult education organizations on the state and regional levels. That means that in the next few months there will be state and regional conferences in certain parts of the country, called to explore ways and means, and to discuss the need for adult education on those particular levels. Representatives of the APHA should certainly be active in this planning and action.

There can be no healthy state, regional, or national growth without strong roots at the local level. If local health organizations are not included in the adult education councils or committees of one's town, find out why not, and try to effect inclusion. Even though there is no formal, direct connection between the national association and local adult education organizations, we in the Adult Education Association recognize that this local organization is the very heart of the adult education movement in this country.

Having covered the topic, briefly to be sure, but I hope at least adequately enough to maintain one's already living interest in the Adult Education Association, I should like to conclude with a few general observations.

Anyone who has any contact at all with the Adult Education Association must have the feeling that here is the stirring of real life. There is the sense about it of experiment, of the eagerness to try new things, a willingness to expose thinking and ideas to the questioning and criticism of others. There are no set formulas in its program—and there is the earnest desire that whatever program there is should be the product not of a few directing heads, but of the whole organization, at least through its representatives. There is great awareness here of the new possibilities just opening to our vision in the field of human relations and the working together of people. There is willingness to experiment and investigate in the whole area of adult learning and living.

Above all, there is the consciousness of the importance of this movement of adult education in relation to the changing, precariously situated world of today. To meet the exigencies of this time, mature minds and hearts and healthy bodies are desperately needed. A great effort must be made—and an effort so great that we may honestly say it is the best we can do—to develop those mature human beings. How to do it is another big question which we must face together, and to which we must find multitudinous answers, never saying or believing that we have found the one answer, the unique panacea.

In conclusion, I want to state that not only I, but all my colleagues in the Adult Education Association, welcome your help and cooperation, and we want to see these beginning relationships which already exist between us grow and grow and grow.

How healthy are teachers? How healthy should they be? Answers to these questions were sought in Nashville where teachers are required to undergo a limited medical examination each summer. One important lack was a screening test for emotional difficulties. Despite limitations, the record of the examinations is both revealing and provocative.

Teachers' Health—Findings and Recommendations*

RENÉE ZINDWER, M.D., M.P.H., F.A.P.H.A.

Chief, Bureau of Maternal and Child Health, New Jersey State Department of Health, Trenton, N. J.

IN the critical evaluation of the total school health program the consideration given to teachers' health has received increasing prominence and today more discussions evolve around the health status of teachers than around that of any other professional group. This attention seems to derive from three areas of interest which are overlapping and yet can be clearly defined.

1. Our primary concern is, of course, the influence of the individual teacher's health upon pupils.

(a) The potential danger of exposing children to a teacher with a communicable disease has long been recognized and needs no further discussion, except, perhaps, to say that some people still do not consider a cold as a communicable disease.

(b) The fact that illness or even suboptimal health on the job decreases the joy of working and professional efficiency is also quite obvious.

(c) The growing awareness of the mental health aspects of school life and the impact of teacher personality upon the social-emotional development of the child has focused our attention upon the mental and emotional health of teachers.

(d) The correlation and interplay of physical and emotional health has only in recent years received fuller recognition, thus reemphasizing the need for evaluation of both.

2. The second area of interest in teachers' health is economic and administrative. The 1938 report of the National Education Association [1] — to date the most comprehensive report on the subject under discussion—indicated that:

12,000	teachers were absent each day during a given school year
300,000	children were taught daily by substitutes
285,000	teachers were absent one or more days because of illness
2,000,000	days are lost annually by teachers due to illness

Translate these figures into dollars and cents and you will realize that communities and school boards providing tenure, paid sick leaves, and disability pensions for their teachers—and fortunately the number is increasing—have, besides their responsibility toward the children, a vested financial interest in appointing healthy teachers and in keeping them well.

3. Last but not least the problem of teachers' health is important from the teachers' viewpoint. Society expects a

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tremendous contribution from our teachers—to teach and guide our young ones and help them to develop to the best of their physical and mental potentialities. This task is of utmost importance and we must be sure that those who are chosen to undertake it are most likely to be physically and emotionally fit to carry the load without detriment to their own health as well as to that of their students. The maintenance of teachers' health, then, is also a responsibility which society must share with the individual by providing working conditions which are desirable and conducive to good health and, if possible, by making available individual counseling services.

The *Health Examination* is being used widely throughout the country as a determining factor in the selection of new teachers, in placing their employment on a permanent basis, and as a periodic check-up. However, methods and policies are by no means uniform. There is considerable variation as to actual requirement, desired intervals, content, and method of the examination. Primarily designed for the protection of children, the health examination of teachers should certainly serve as an opportunity for health counseling.

If findings of the periodic health examination are uniformly recorded and centrally available, much useful information can be obtained from a statistical study. Such a study, or series of studies, could be used to determine the health status of the entire teaching staff as well as to ascertain specific health problems and risks of certain groups within the staff. It also could be used for evaluation of the effectiveness of current policies and procedures in terms of purpose and needs.

The study reported here was such an attempt. We wanted to know what information regarding the health experience of a group of teachers could be obtained as revealed by the records of their routine health examination. The group in question were the teachers in active service with the public school system of Nashville, Tenn. In addition to an annual chest x-ray survey of all employees done in cooperation with the City and State Departments of Health, all teachers employed by the Nashville Board of Education are required to have an annual medical examination during the summer. Those with Civil Service status are at liberty to have the examination performed either by a private physician at their own expense or by the school physician without cost. Those without Civil Service status must be examined by a school physician. The latter group includes all teachers who have not as yet completed the required trial period of three years. It also includes some who joined the system after reaching the age of 36 years, and a few who did not pass the physical examination for eligibility to Civil Service status since they were a doubtful insurance risk, but whose current health status was considered compatible with teaching.

All examinations are recorded on a prescribed form, screened and filed at the School Health Service office. Appropriate recommendations are made by the medical director to the superintendent of schools. An analysis was made of the findings recorded during the summer of 1948. All teachers' health records were included in the study with the exception of a few which were discarded because of incompleteness. A total of 843 records was thus examined. Here are some of the findings.

RACIAL DISTRIBUTION, SEX DISTRIBUTION, CIVIL SERVICE STATUS

Nashville has segregated schools for white and Negro children and the proportion of Negro to white teachers corresponds approximately with the racial distribution of pupils. Negro teachers represented 29 per cent of the teaching staff. The sex distribution

within the two racial groups was interesting. Although there was a marked preponderance of female teachers in both groups, it was much greater among the whites. Less than one-seventh of all white teachers were men; whereas about one-fourth of the Negro teachers were males. This difference is most likely explained by a definite limitation of other opportunities for white collar jobs to Negroes. Approximately two-thirds of the teachers had Civil Service status. The percentage was significantly higher among the Negroes, indicating less turnover of Negro teachers, probably for the same economic reasons I have just mentioned.

AGE DISTRIBUTION

The mean age of the entire group was 41.5 years; the men had a somewhat lower, the women a slightly higher average. Negro males were the youngest group, averaging 39.3 years; white females had the highest group average of 42.4 years. The majority of teachers were between 30 and 50 years old with an age range of 20–69 years.

NUMBER EXAMINED BY SCHOOL PHYSICIANS

It was interesting to note that, although two-thirds of the teachers had the privilege of choosing their private physician for the examination, only one-fifth actually did so. The expense involved in the private physicians examination was certainly a motivating factor, particularly among the older teachers. Many of these still considered the examination as something to submit to exclusively for the convenience of the Board of Education without recognizing the intrinsic value to themselves. In other instances, however, the examination by a school physician was preferred because of friendly relationships and because the teachers liked to discuss their health problems with the school doctor.

DEFINITION OF TERMINOLOGY

Since, at that time, we were more interested in the cumulative adverse health experiences of our teachers than in determining specifically the defects discovered at the one particular health examination given in 1948, we termed as "Positive Findings" not only actual defects found, but included any item of the medical history which could have a significant aftereffect. This, we thought, was particularly important, because the required health examination had its definite limitations. It did not include a pelvic or rectal examination or any laboratory work. These findings, then, were grouped into specific categories. Table 1 gives the various categories, and what they actually included. In addition we noted the number of recorded recommendations given to the teachers, following the examination. We had to omit from this report the highly important category of ear pathology since no audiometer testing was done at the time of the examination and results of previous testings were not available for the entire group of teachers.

As one can see from this summary some categories are predominantly made up of actual defects found at the medical examination; others are weighted with items of the medical history.

TOTAL AND AGE DISTRIBUTION OF FINDINGS

Table 2 indicates the total and age distribution of findings. We can see that more than one-half of all teachers examined had defective eyes, mostly defects in vision, and that more than one-third had two or more positive findings. I should like to stress here that we included in the group of multiple findings only actual defects found and such items of the history which would affect the examined person at the time of the examination. In addition, one-fourth had submitted to a minor operation, and not quite as many to major

TABLE 1—*Grouping of Medical Information*

Category	*Items Included*
Eyes	Visual defects: included were all recorded visual defects whether or not adequately corrected by glasses; they comprise the majority of cases in this group; enucleation of one eye, cataracts, and coloboma.
Dental	Dental caries, missing teeth, artificial dentures, diseased gums, and very poor oral hygiene.
Obesity	Relation of weight to height and frame was considered, but no standard tables were used.
Cardiovascular	Included were all cases with heart murmurs not considered as functional, irregularity of pulse unless on a respiratory basis, tachycardia (pulse 100 or above after 5 minutes' rest), cardiac enlargement and hypertrophy; hypertension (systolic pressure 150 or above, diastolic 90 or above), and 33 cases with varicose veins were included in this group, some of whom had other cardiovascular symptoms.
Respiratory	Abnormal pulmonary rales at time of examination, history of chronic sinusitis, and history of inactive minimal tuberculosis * (1 case).
Orthopedic	The majority of cases included in this group had flat feet; other defects counted here were kyphosis, lordosis, scoliosis, arthritis, hallux valgus, and badly healed fractured toe causing difficulties.
Gastrointestinal	History of chronic constipation, hemorrhoids, gastric or duodenal ulcers, gallbladder disease, chronic colitis, spastic colon, colics, and acute diarrhea.
Genitourinary	Included hypospadia, undescended testicle, history of kidney stones, "inflammation of kidney," kink in ureter, albuminuria, dysmenorrhea, and menorrhagia.
Fractures	All cases with fracture history.
Major surgery	All those with history of major surgery were tabulated here. The following operations were listed: appendectomy, bladder, cataract, herniorrhaphy, hysterectomy, lumbar sympathectomy, mastectomy, oophorectomy, prostatectomy, removal of bone, removal of uterine fibroids, removal of intestinal tumor.
Minor surgery	Removal of tonsils and adenoids (comprising the majority of operations included here), removal of nasal polyps, straightening of deviated nasal septum, colporrhaphy, hemorrhoidectomy, removal of sebaceous cysts, removal of keloid, and varicose vein operations.
Emotional	This group comprises all cases who at the time of examination gave some evidence of being emotionally disturbed or had a very strong history of such disturbance.
Tumors	Counted here were any findings or history of benign or malignant tumors. The majority were uterine fibroids; some were ovarian tumors, endometrial polyps, some breast and intestinal cancer. The information in regard to tumor history was quite adequate as far as location of the tumor was concerned, but of course, not nearly as dependable as to type of tumor.
Miscellaneous	This category includes a variety of findings which did not fit into any of the above groups. Included were cases with: eczema of ear canal, intertrigo, ichthyosis, psoriasis, persistent hoarseness, tender area in breast, abdominal localized tenderness, acne, anemia, Meniere's syndrome, history and indications of metabolic disturbances, chronic cystic mastitis, inguinal hernia, Parkinsonism, pityriasis versicolor, deformity of hard palate, dermatitis, large pigmented mole, allergic history, underweight, slight facial palsy, history of multiple miscarriages, diabetes, rheumatic fever history, bruises following an accident, extensive vascular birthmark, etc.
Multiple findings	Included were all cases with two or more findings as determined in the above groups. History of successful surgery, however, was not counted here and neither was a tumor nor other disease history without direct pertinence to the present state of health.
Free	These were the cases without any significant history of disease and showing no defect on physical examination.
Recommendations	Included all cases where the doctor's recommendations were recorded, a number which is thought to be considerably smaller than the number to whom recommendations were actually given.

* In December, 1948, the chest x-ray survey of the 1,422 employees of the Nashville School System, including 852 teachers, indicated the following:

	Total	*White*	*Negro*
Moderately advanced TB, inactive	1	0	1
Minimal TB, inactive	13	7	1
Minimal TB, doubtful activity	2	1	1
Diagnosis undetermined, re-examination in 1 month recommended	12	8	4
Unsatisfactory findings, re-examination recommended	2	1	1

TABLE 2

Percentage Distribution of Findings in the Total Group and in Age Groups (Age Specific Rates)

Category of Findings	Age Groups					
	20–29 Per cent	30–39 Per cent	40–49 Per cent	50–59 Per cent	60–69 Per cent	All Ages Per cent
Eyes	42.4	36.3	56.6	84.5	87.9	53.8
Dental	12.7	6.8	12.4	31.6	41.4	15.2
Obesity	5.1	14.0	19.0	14.5	20.7	14.9
Cardiovascular	8.5	7.5	15.5	29.1	41.4	15.5
Respiratory	1.7	1.7	1.9	..	1.7	1.5
Orthopedic	11.9	9.6	14.0	22.2	15.5	13.5
Gastrointestinal	1.7	7.2	13.6	7.7	5.2	8.3
Genitourinary	0.9	1.0	1.2	0.9	..	0.9
Fractures	7.6	8.6	5.8	17.1	13.8	9.2
Major surgery	12.7	19.9	27.1	30.6	17.2	22.5
Minor surgery	21.2	24.3	29.5	25.6	19.0	25.4
Emotional	7.6	6.2	6.6	4.3	5.2	6.1
Tumors	0.9	8.2	17.1	18.8	6.9	11.3
Miscellaneous	22.9	13.4	22.5	17.1	46.6	20.4
Multiple findings	25.4	28.1	48.8	68.4	32.8	41.2
Recommendations	15.3	16.4	19.8	26.5	15.5	18.7
Free	18.6	22.5	5.4	2.6	..	12.5
Total number in age group	118	292	258	117	58	843

surgery. Only one-eighth of the total group was free from defects and had a negative history.

There was, as expected, with slight variations, a definite increase in the number of positive findings with increasing age. This was particularly so in eye defects, dental defects, the cardiovascular group, and the miscellaneous category. The fact that the oldest group of teachers (60–69) had fewer operations, tumors, and multiple findings than younger teachers, could, perhaps, be explained by the thought that they were probably a selected group. While others of their generation had dropped out from active professional life earlier, this group might illustrate the "survival of the fittest."

I was particularly interested in the category referring to emotional disturbances. The over-all percentage of about six per cent was very low as compared to other reports.[2, 3] I am fairly sure that our figure is lower than the actual situation might warrant. It indicates to me that this extremely important health problem is not being brought out adequately by the average routine health examination even if special efforts were made to spot it.

SEX DISTRIBUTION OF FINDINGS

Table 3 indicates the sex distribution of findings. Statistical significance tests were applied to determine whether or not the differences between the findings among men and women were significant or due to chance variation. It was found that the women had significantly more eye defects, cardiovascular difficulties, operations, and multiple findings than the men. When it came to major surgery they experienced more than twice the risk than did their male colleagues.

The majority of operations recorded were in connection with uterine or ovarian pathology. There were no histories or findings of tumors among the men of this group. It seems, then, that the men, as a whole, were a somewhat healthier group than the women. It was interesting to note that in contrast to expectations no appreciable difference was found in the proportionate number who appeared to have emotional difficulties.

TABLE 3

Distribution of Number and Percentages of Findings Among the Sexes (Sex Specific Rates)

Category of Findings	Total Female		Total Male	
	Number	Per cent	Number	Per cent
Eyes	392	56.0	60	42.9
Dental	111	15.9	17	12.1
Obesity	99	14.1	26	18.6
Cardiovascular	116	16.6	14	10.0
Respiratory	12	1.7	1	0.7
Orthopedic	96	13.7	17	12.1
Gastrointestinal	59	8.4	11	7.9
Genitourinary	6	0.9	2	1.4
Fractures	63	9.0	14	10.0
Major surgery	173	24.7	16	11.4
Minor surgery	184	26.3	29	20.7
Emotional	42	6.0	9	6.4
Tumors	95	13.6	..	..
Miscellaneous	148	21.1	23	16.4
Multiple findings	287	41.0	50	35.7
Recommendations	134	19.1	23	16.4
Free	81	11.6	24	17.1
Total number	703		140	

RACIAL DIFFERENCES

In comparing the two racial groups we found that in both sexes the Negroes had significantly less dental defects, miscellaneous findings, and minor surgery experience, and that they had a higher proportion of people with a clean health slate, particularly among the women. The Negro women also had significantly less eye defects and fracture histories than the white women. On the other side of the ledger they had a considerably higher incidence of obesity and cardiovascular findings as compared to the white women. We also noted fewer orthopedic defects recorded for the Negro group, but we have reasons to believe that this was probably due to unequal emphasis on the part of the medical examiners rather than to the actual situation.

Thus, all in all, the Negro teachers appeared to be a healthier group than white teachers in that school system.

DIFFERENCES BETWEEN FINDINGS OF SCHOOL PHYSICIANS AND PRIVATE PHYSICIANS

For the purpose of comparing the findings of school physicians and private physicians we considered only the teachers with Civil Service status in order to have a more homogeneous group. Of the 562 people falling into this category, 148 were examined by private physicians and 414 by school physicians.

The higher incidence of eye defects, dental defects, orthopedic problems, and miscellaneous findings as well as of recommendations noted among those examined by school physicians was highly significant, and so was the fact that the group examined by private physicians had about three times as many people free from defects or pertinent history as those examined by the school doctors. The private physicians also found significantly less emotional difficulties. Altogether, the private physicians' records showed 1.7 positive findings per person; whereas the school physicians noted 2.6 such findings per person. Similar experience has been reported in 1949 by Bloom in the *Journal of School Health*.[4]

The difference in the notation of visual defects may be due to the fact that many private doctors might not have considered corrected vision as a defect.

They also might not have registered

TABLE 4

Distribution of Number, Percentages and Findings Among Negroes and Whites (Race and Sex Specific Rates)

Category of Findings	White Females		Negro Females		White Males		Negro Males	
	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent
Eyes	323	62.2	69	38.3	35	43.8	25	41.7
Dental	100	19.2	11	6.1	14	17.5	3	5.0
Obesity	51	9.9	48	26.7	15	18.8	11	18.3
Cardiovascular	69	13.3	47	26.1	7	8.8	7	11.7
Respiratory	9	1.7	3	1.7	1	1.3	..	..
Orthopedic	93	17.9	3	1.7	16	20.0	1	1.7
Gastrointestinal	46	8.8	13	7.2	6	7.5	5	8.3
Genitourinary	6	1.2	..	..	2	2.5	..	..
Fractures	57	11.0	6	3.3	10	12.5	4	6.7
Major surgery	138	26.5	35	19.4	12	15.0	4	6.7
Minor surgery	163	31.3	21	11.7	19	23.8	10	16.7
Emotional	34	6.5	8	4.4	6	7.5	5	8.0
Tumors	73*	14.0	22	12.2	..	..	..	..
Miscellaneous	132	25.4	16	8.9	17	21.3	6	10.0
Multiple findings	229	44.0	58	32.2	32	40.0	18	30.0
Recommendations	116	22.3	18	10.0	20	25.0	3	5.0
Free	41	7.9	40	22.2	7	8.8	17	28.3
Total number	522		181		80		60	

* In this group one early cancer of breast, proved by subsequent surgery, was discovered at the routine examination by school physician

artificial denture as a dental defect and therefore did not mention it. The difference in orthopedic findings could be due to less emphasis on the part of private physicians. The same might explain the fact that the private physicians found significantly less emotionally disturbed people. The difference in the number of individual positive findings influences, of course, the recording of multiple findings. It was interesting to note that there was very little difference in those categories where the past history of the examinee was of considerable account as in surgery, fractures, etc.

School physicians recorded about 12 times as many recommendations as private doctors. This may be because some private physicians might not have seen any point in recording their recommendations on records which were to be filed with the School Health Service office.

Are teachers examined by private doctors actually a healthier group because, perhaps, those who chose to be examined by their family doctor might be in the habit of going regularly to him, thus preventing trouble before it it starts? Or are some doctors in private practice less interested in routine health examinations which might result in less adequate recording? The answer to these questions might occasionally be of more than purely academic interest if the health record is to be one of the determining factors in the continuation of professional activity of the respective teacher.

CONCLUSIONS

These, then, were the things we learned from our study, and here are some conclusions which may be of general interest:

1. There were definite inadequacies in the content of the physical examination. The high incidence of ovarian and uterine pathology as learned in retrospect from the history of surgical interventions only confirms the current thought that a pelvic as well as a rectal examination should be a required part of a health examination in order to detect early pathology. Also, a minimum of laboratory work should be included, such as urine examination, Hgb., etc.

2. Standardized procedures of exam-

ination and recording should be developed. Wherever private physicians' services are utilized for the health examination, a close relationship with the school health service staff should be fostered and the private physicians should be carefully informed about the exact purpose and use of the examination, and the particular problems regarding health matters which the school situation presents. If a school system has no organized school health service with a medical director in charge, the superintendent may ask the local medical society to help draw up policies and procedures pertaining to the health examinations of teachers.

3. If at all possible, consultant services and special examinations should be available should the routine examination indicate the need for further studies. If such additional investigation is indicated from the administration's point of view, the financial responsibility should rest with the schools.

4. Our study strongly suggests that the routine health examination does not by any means detect all those teachers who are emotionally disturbed. Since the importance of detecting and evaluating such disturbances in teachers is now generally accepted, we must find a practical method for screening such cases and referring them to specialists for further study and recommendations. The Minnesota Multiphasic Personality Inventory Test, which has been used extensively with army personnel may prove useful. There is, however, a great need for research in this field and we must look for help to our psychologists and psychiatrists. Perhaps a careful pilot study could be made whereby the effectiveness of screening tests could be checked against more detailed psychological and psychiatric studies. In any event, the understanding and acceptance of such procedures by the teachers as a group must be secured.

5. A cumulative health record kept with clinical findings, medical history, and recommendations carefully recorded, can be very useful as furnishing a background picture for the individual. It also could be utilized in longitudinal studies over a period of years for a given group of teachers. Such studies may perhaps discover certain trends in the health experiences of the group; they also could serve as evaluation tools in testing the effectiveness of the counseling technics used during the examination.

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These are purely rhetorical questions. If physicians in general practice are to give the lions share of all pediatric guidance, should not the medical student be exposed to the care of well babies as much as he is to the care of sick infants? If hospital residents, under adequate supervision, are to take part in the well baby program, should not the health department child health conference be the scene of their learning experience?

The Role of a Health Department in Training Pediatric Residents*

ELIZABETH KIRK ROSE, M.D., AND JOHN A. ROSE, M.D.

Chief, Section on Maternal and Child Health, Philadelphia Department of Public Health and Assistant Professor of Pediatrics, School of Medicine, University of Pennsylvania; and Assistant Professor of Psychiatry in Pediatrics, School of Medicine, University of Pennsylvania, Philadelphia, Pa.

THE recent study[1] of the American Academy of Pediatrics revealed a disproportion between the large segment of well child care being undertaken by the general practitioner and pediatrician and the relatively meager opportunities for training for this service. The purpose of this report is to describe one plan in which a health department and a children's hospital undertook a joint project in the training of pediatric residents.

Among the objectives of this plan, either stated or implied, are: understanding the variation and inclusiveness of the "normal" child and of the parent-child relationship; the physician's need to be sensitized to the meaning of his role in working with the parent; the concept that health supervision of the child includes not only physical care, protection from disease by immunization, but also nutrition and personality development as full as is possible for each child; and that working toward these objectives is a part of a continuous learning process for all involved. It would seem that the specialties of public health, of pediatrics, and of nursing have an obligation to integrate their efforts in educating[2] for better service for children. Other disciplines also contribute, psychiatry by its understanding of personality development, social work by its technic of interviewing, psychology by studies of behavior.[3]

Leading pediatric educators, medical school deans, and the American Board of Pediatrics are interested in broadening the pediatric curriculum to include study of and experience with normal children, or perhaps we should say with children other than those encountered in hospital wards or clinics. One approach would seem to lie in a cooperative venture between the child health program of a health department and an organized pediatric residency training program. Specifically, then, all one would need to set up a plan to train more fully future pediatricians would seem to be three things, (1) a group of such physicians already in training (pediatric residents,

* Presented before a Joint Session of the Maternal and Child Health, Public Health Education, and Public Health Nursing Sections of the American Public Health Association at the Eightieth Annual Meeting in Cleveland, Ohio, October 24, 1952.

hospital interns, or medical students), (2) normal children who might be seen regularly over a long period of time, and (3) supervision.

Physicians in training are widely distributed throughout this country [4]; some 25,000 undergraduate medical students in the 81 various medical schools, approximately 6,000 graduates serving as interns in the 844 approved hospitals with 9,278 available internships, and probably 800 or 1,000 in the 239 hospitals approved for 1,267 available pediatric and assistant pediatric residencies. In all this would indicate approximately 32,000 physicians now in training who, from the present pattern,[1] might be expected to be entrusted with 85 to 90 per cent of the child care in this country.

A source of supply of normal children available for observation over a period of several years was thought to be through the child health conferences. However, there are two serious defects often associated with child health conferences, the limited time available per visit and the inadequate supervision. It is assumed that in general the value of residency training is based on the personal supervision provided and on the opportunity afforded for creative work without undue pressure from routine tasks. Consideration was given to limitation of appointments (four children per two-hour session) in order to afford the resident time for discussion of his cases with the supervisor. These points in themselves are not especially new,[2] but the importance and frequent omission of adequate supervision in teaching programs is emphasized. By assigning a resident one afternoon a week to the same child health conference throughout his training, it was fairly assured that the same children could be followed over this two-year period. The unique part of the present plan lay in the conferences among supervisors, wherein experiences and objectives were discussed. This phase, in itself, might well be the topic of a separate study.

Thus, on a trial basis, a program was set up whereby 22 pediatric residents serving a two years' residency were assigned in pairs to a child health conference throughout their training period. Each was scheduled to see four children at each weekly two-hour session. The resident physician conferred with the parent and examined the child, and at the end of the session there was an informal discussion among the resident physicians and the supervisor of the cases on any related matters. Five members of the teaching staff from the Department of Pediatrics were assigned, one to each of the five sessions per week. At first, three, later only two, different child health conference centers were used. Cases were selected in the hope that the same physician might follow not only his patient, which was usually a newborn or very young infant, but also the other siblings might be brought in so that the family could be considered as a unit.

In addition to the usual medical record form used in the child health conference, an additional sheet was used to plot development of motor skills and to note a yearly summary of the child's progress and status from the first through the sixth year. Use was made of a newly designed health record booklet, wherein there was not only space for the physician's notes as to diet, vitamins, and next appointment date but also room for the parent to record notes on the child's progress and questions to bring up at the next conference. Utilization of the experience and records of the public health nurse was emphasized.

Once a working hypothesis of this program was relatively well established, the next important step was to attempt evaluation and modification. What did the residents feel they were getting?

Was supervision a profitable experience? And finally, lest we forget the child and his family as the primary object, what did the families think of it?

Meetings of the supervisors were held during the year to review their experiences with this new program. These meetings revealed a wide range of individual interpretation and emphasis as to the objectives of the program. Despite the added teaching burden and occasional unavoidable absence, there generally was sustained growth of interest. Supervisors criticized the program and each other candidly. From among their written comments are the following: "Though this aspect of pediatric care supposedly 'comes naturally' it is extremely valuable to have residents involved in this experience while they have access to counsel and expert advice from the staff. It creates interest in good preventive pediatric care in terms of normal growth and emotional well-being. It is a definite contrast to the classic teaching experience with specific diseases encountered in outpatient and hospitalized patients. It demonstrates variability of normal growth and development."

Another supervisor stated: "Excellent opportunity for residents to evaluate the growth and development of well infants and to gain confidence in their routine care." One thought it valuable from this aspect: "Duration of the experience—that it is spread over a two-year period permitting prolonged observation of individual child growth and development."

Occasionally, schedules were interrupted during this first year and there was general dissatisfaction over this. Improvement in the current year's schedule now assures each resident of being able to follow the same families and the same children.

Superficially, the residents, too, liked the program but in order to obtain a more objective evaluation a questionnaire was circulated after the first six months. On this questionnaire each was asked for comments on the advantages and disadvantages of the program and for suggestions for improvements. These were not to be signed. While there were many minor objections, there was unanimous approval of this opportunity to associate with well children and several constructive suggestions were made and subsequently adopted.

As a stimulus to the preparation of articles as a part of medical education one resident prepared and published [5] a case report, "A Case of Infantile Cortical Hyperostosis, Detected in a Child Health Conference." The latter is described as "where continuous health supervision of the child is stressed, and the hospital where the clinical entity, whether it be infantile cortical hyperostosis or acute tonsillitis, is finally diagnosed and treated." It was recognized that there were other important aspects as well, such as the interpretation to the mother and the need for the continued supervision of this infant.

Several residents requested experience in following certain children with the use of Wetzel grids, others used Gesell charts, while all had access to the anticipatory guidance schema suggested in the preliminary outline on the conduct of a child health conference by a special committee appointed by the American Public Health Association.

It was interesting to note that in the beginning there was greater concern with the more common, mechanical or physical type of pediatric problem, the ingredients and preparation of formulas, feeding regimens, constipation, umbilical hernia, immunization; whereas all supervisors noted independently that as experience grew and a good relationship was established between the physician and the parent, then hitherto unraised questions came from the parents. This

seemed to bear out the observations of others, that once the physician indicates that his interest in the child extends beyond the mere physical aspects, then the parent brings to him those questions concerning problems which are not often raised in the usual parent-physician conference in a hospital or office setting.

SUMMARY

An instance is described in which a public health department set up a training program for pediatric residents. It is suggested that such a venture can be mutually beneficial, that the success depends on organization, adequate supervision, and frequent evaluation.

In a venture of this kind the health department profits by reason of having planned for teaching, and the resident training program benefits by having a ready-made set up at hand. This affords a tremendous opportunity for the physician to understand the development of the child and the family interaction because he is functioning more as a health counselor than as the physician dealing with morbid or pathological conditions.

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"The necessity for practicing medicine under the most adverse circumstances is the only justification for what is termed 'general practice.' Surely it is anachronistic to believe that the level of patient care in this country will be raised by returning to an era of practice in which a single physician is expected to have competence in all aspects of medicine. . . . The 'family physician' should supersede the 'general practitioner,' and it is the function of the well trained internist to be the family physician. His role is to know the patient and his environment, to care for him and his family in health and illness, to guide him to specialists when his problems require their skills, and at all times to be his counselor and friend."—Robert F. Loeb and Dana W. Atchley, *Journal of Medical Education*, February, 1953, Vol. 28, No. 2.

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THE SHAME OF THE SLUMS

"DOMESTIC garbage and filth of every kind is thrown into the streets, covering their surfaces, filling the gutters, obstructing the sewer culverts, and sending forth perennial emanations which must generate pestiferous diseases. In winter the filth and garbage, etc., accumulate in the streets to the depth sometimes of two or three feet." "The streets are generally in a filthy and unwholesome condition; especially in front of the tenant houses, from which garbage and slops are, to a great extent, thrown into the streets where they putrefy, rendering the air offensive to the smell and deleterious to health. The refuse of the bedrooms of those sick with typhoid and scarlet fevers and smallpox is frequently thrown into the streets, there to contaminate the air, and, no doubt, aid in the spread of those pestilential diseases." "The privies form one of the chief features of insalubrity. Nearly all of them are too small in size and too few in number, and are without ventilation or seat-covers. About twelve were found full to the floor timbers or within one foot of them. In some cases the doors were found to be locked securely, and on procuring the key and inspecting the privy, such masses of human excrements were found on the seats and floors as would justify the locking of the doors to protect unwary persons from injury." "At high tide the water often wells up through the floors, submerging them to a considerable depth" (this condition refers to cellar dwellings). "In very many cases the vaults of privies

are situated on the same or higher level, and their contents frequently ooze through the walls into the occupied apartments beside them."[1]

This was the City of New York; but the conditions described were observed in 1865; and we have assumed that during the past century the grosser forms of insanitation have been eliminated.

"I stepped into one of the dimly lit, narrow hallways off Madison Avenue and knocked at the door. . . . At first glance, the place looked like a jumbled storeroom for second-hand beds. Squeezed into a 15- by 18-foot area were a three-quarter bed for the father and mother, with a bath curtain to close it from view; a crib for the seven-year-old; a wooden double-decker where two small girls share the lower section, leaving a teen-age sister the upper; a roll-away for a boy 18; a bathtub; and a toilet set up in a small clothes closet. Mrs. Cruz cooks on a tiny gas ring. At mealtime, three of the family draw up to a small table—they have only three chairs—while the other four sit on the beds, plates on laps, or eat standing up. Dishes dry on a board laid across the end of the bathtub. And this is typical."[2] "In one cellar dwelling the air was stifling, the odor of urine and unburned gas, with a distinct sooty smell superimposed, permeated the rooms. The first room was called a living room; actually both of the two rooms in this so-called 'apartment' were bedrooms. Couches and beds of many descriptions were placed in every available bit of floor space. One room measured 9 by 13 feet; the other 9 by 10 feet. The cold cement flooring was cracked and broken, and encrusted with black soot and filth. The crudely plastered walls and ceilings were also cracked; the ancient paint was peeling and blistering throughout and was covered with soot. The gas range, crowded into a corner of the smaller room, was burning continuously to provide heat, as the only other fixture was a steam riser running along the ceiling which was totally inadequate. The windows were sealed tightly to keep out the cold, thereby eliminating any ventilation to the outside air. In the dim light of several electric bulbs, hooked by means of crude wiring, the expressionless faces of six children moved with us as we picked our way through the crowded rooms. They were dirty little children, definitely not robust, and the only noise was a constant series of deep coughs emitted by each one. In the passageway just outside the door we had to use flashlights to avoid stumbling over refuse littered everywhere on the cellar floor. In addition there were pools of water from leaking soil lines, the stench of sewage was nauseating. Near the furnace we discovered human feces on the cellar floor. In one particularly dank, dark, wet corner was a toilet bowl and slop sink. There was no sign of a bathtub anywhere. To get back to the door of the cellar we had to walk on boards to prevent soaking our feet in sewage."

These conditions were also observed in New York City; but in the year 1952. In a recent inspection drive in the Borough of Manhattan, about one in eight was a cellar dwelling. There are today worse slums in certain of the Puerto Rican areas of Harlem than can be found in any city of northwestern Europe—conditions far worse than those from which our Puerto Rican immigrants have come; for the slums of San Juan have at least sunlight and fresh air. Harlem presents New York's most serious problem, but a recent Grand Jury study in Brooklyn has revealed conditions almost as grave in that borough; and it is doubtful if any city of considerable size in the United States does not offer comparable situations. Here is one instance reported in New Haven, Conn., perhaps one of our best housed New England cities. A doctor was called to an emergency delivery in a tenement during a winter month; he found a woman living without any source of

heat or light except a candle and no source of water within the apartment. He succeeded in delivering the baby and tried to dispose of the cord in the dark toilet in the hall only to find that the flush had been out of order for six months.

What should be done about such conditions as these which disgrace the cities of the most prosperous country in the world?

The first obvious answer is to enforce our housing laws; remodel or vacate such substandard dwellings as those which have been described; and both in Brooklyn and Manhattan active movements are now in progress for the condemnation of unsafe and unsanitary dwellings and for rehabilitation based on comprehensive block-by-block inspections. It would be a great mistake, however, if the city were lulled with the hope that such procedures alone will solve the problem. If the city were to purchase 100,000 Quonset huts and were to set them up in Central Park, it would be possible to clean up the most menacing slum and to move evicted families into temporary quarters; but this is perhaps too radical a procedure to hope for.

The slum dweller is the real problem, not the slum. The basic inescapable fact is that a substantial part of our urban population cannot pay for decent housing. In an Atlantic seaboard city like New York, private capital cannot possibly build and maintain decent housing for rent at less than $30 per room per month. No family of a size requiring a three-room apartment can afford to pay such a rent on a family income of less than $5,000 a year. It is true that gouging landlords are, in some instances, obtaining huge incomes from subdivided tenements and cellar dwellings. To expect, however, the private landlord to be able to meet the housing needs of the $2,000-income families with children is a fantastic dream. The submerged one-tenth of the population of New York and of other large cities, who have incomes of $2,000 or less, can pay only $30 per month for the whole dwelling unit.

It was for this very reason that our federally subsidized low-rent housing program was initiated; it can provide a most economical type of basically decent housing and provide it to the needy tenant for a price of $30 per month for an average household. The far more extensive development of this program is an essential precedent to the elimination of the slum dwelling; yet the entire basis of our low-rent housing program is now under attack. Last year only 35,000 units were authorized by Congress; and the House of Representatives desired to place the limit at 5,000 units for the entire United States. Such a figure does not do justice to the common sense of the American people.

The American Public Health Association is in full sympathy with the enforcement of basic legal standards for healthful housing. It has prepared a model for housing ordinances, which is now being considered for adoption by several cities. We hope that public health workers all over the country will bear in mind that provision of decent low-rent housing must parallel legal condemnation of dangerous and insanitary housing and will use their full influence to see that the 83rd Congress takes adequate steps to continue the public housing program. In this way—and only in this way—can the dark shadow of the slum be eliminated from the American scene.

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[1] *Report of the Council of Hygiene and Public Health of the Citizens Association of New York upon the Sanitary Condition of the City.* New York, 1865.

[2] Clark, Blake. The Puerto Rican Problem in New York. *Reader's Digest.* Feb., 1953, pp. 61–65.

HEALTH AND SAFETY IN THE TENNESSEE VALLEY

ONE of the points stressed by President Eisenhower in his January report to the Congress on the State of the Nation was the need for programs of regional conservation and development of latent natural resources. Under whatever form of coordination between federal and local governments and private enterprise such projects may be conducted, the experience of the Tennessee Valley Authority will be of incalculable value in this connection because it is recognized throughout the world as one of the major contributions to sound social progress made by our country during the past half century.

In the field of public health, the control of malaria in the Tennessee Valley is familiar to us all. Less widely publicized has been the program of health and safety for the Authority employees, developed under the inspired leadership of the late Dr. E. L. Bishop, a past president of the American Public Health Association.

In a recent report,[1] Dr. O. M. Derryberry presents the following very striking record. Among the employees of the Authority the accident rate per million man-hours work has decreased from 62.5 in 1935 to 5.5 in 1951. The reduction in days lost from accidents per million man-hours worked has fallen from 6,950 to 1,450.

This remarkable result has, of course, been accomplished by a combination of safety practices, of prompt high quality medical and nursing care and of education of the employees in the essentials of health and safety. Where such health and safety programs as that of the TVA are in force in private industry, it would be desirable to present similar analyses of the results attained and their financial value to the companies concerned and to the workers involved. Where such programs are not in force, the TVA should furnish an inspiring impetus for future progress.

[1] *Tennessee Industrial Hygiene News*. October, 1952. p. 5.

LIVING LONGER

THE prolongation of human life which has taken place in the past half century is, of course, one of the major satisfactions of the public health worker. There are, however, certain details of the process which are less familiar than its general trend. An analysis by R. J. Myers,[1] dealing with life expectancy between 1900 and 1948, brings out the following interesting points.

First of all, the increase in life expectancy has been clearly manifest in some degree throughout the whole life span and not merely at the period when acute communicable diseases—amenable to direct control—take their major toll. Since 1900, the average life expectancy at 20 years of age has increased in the United States from roughly 43 years to nearly 51 years; at the age of 50, the life expectancy has risen from under 22 years to over 24 years; at age 70 it has increased from over 9 years to over 10 years. The percentage of improvement is, obviously, less at the older age periods.

Secondly, the improvement in life expectancy has proceeded at a generally accelerating rate, as the table below (computed from Myers's figures) indicates.

Percentage improvement in life expectancy at ages 50 and 70 for the 18 years between 1930 and 1948 has been equal to—or greater than—the improvement in the 30 years between 1900 and 1930.

Percentage Change in Life Expectancy

	At Age 20		*At Age 50*		*At Age 70*	
	Males	*Females*	*Males*	*Females*	*Males*	*Females*
1900–1930	9	11	4	7	2	5
1930–1948	7	11	4	12	7	11
1900–1948	16	23	8	20	9	17

Finally, the most striking thing about these figures is the marked—and progressively increasing—superiority of females over males in increasing life expectancy. At every age and in every period their expectancy exceeds that of males, by nearly four years at ages 20 and 50, and by nearly a year and a half at age 70; and their rate of improvement at ages 50 and 70 is about twice that of males. The phenomenon is one which presents an intriguing enigma for the thoughtful student of health and social problems.

[1] Myers, R. J. *Science* 116:67 (July 18), 1952.

The Journal 25 Years Ago

Mental Health Week currently being celebrated as the start of another year of public mental health education makes timely a *Journal* editorial of 25 years ago. "Man's Last Specter—Mental Disease" (*A.J.P.H.* 18, 7:902 (July), 1928), in which the editor calls on public health workers to cultivate the mental hygiene field, has a surprisingly modern ring.

"Public health workers . . . are regarding with mounting concern both the vastness of the problem created by mental diseases in this country and the meagerness of the resources for combating it.

". . . It is the fathers and mothers usually who, with excellent intentions, create the undesirable personality traits and difficulties that characterize the 'problem' child. Public health workers will do well to bear in mind that 'problem children mean problem parents.'

"The actual measures of attack in a preventive program call for the highest professional skill and special training. Child guidance clinics and similar clinical agencies, when properly conducted, probably represent the highest point yet reached in the development of machinery for dealing with maladjusted children. By the same token they also represent one of the most complicated pieces of machinery. It is no simple matter to deal wisely and efficiently with 'problem' children, although it is admitted there often has been given a deceptive coloring of simplicity to the description of certain pieces of work accomplished.

"A fertile and responsive field awaits cultivation by public health workers who interest themselves in mental hygiene, especially at first in its educational aspects. The layman . . . knows little of mental disorders, their prevention and their early treatment. To instruct him is not easy; there may be no bacilli to show under the microscope; no change in the brain to demonstrate. The causes are comp'ex and elusive; preventive measures will not bring immediate returns, but new weapons of attack have been forged; much technical information awaits public interpretation; and renewed hope that 'Man's Last Specter—Mental Disease' may some day also be vanquished is warranted by the progress already made."

Credit Lines

The Journal cannot furnish copies of items mentioned in Credit Lines. Please send requests to the addresses given.

CITIZEN SUPPORT FOR LEGISLATION

The Legislative Committee of the Florida Public Health Association in February held a series of six regional meetings covering the entire state. At each meeting six official and voluntary health agencies gave citizens and government officials a "preview" of their legislative proposals. The agencies involved were the State Board of Health, the state cancer and mental health societies, the State Tuberculosis Board, the Crippled Children's Commission, and the Florida Anti-Mosquito Association.

Representatives of the six agencies told of their legislative proposals for meeting unmet needs and extending present facilities to keep up with the rapidly expanding population, and answered questions about the operations of their own organizations.

In addition to legislators and government officials, the meetings were open to members of medical societies, PTA's, American Legion, other patriotic and civic societies, and interested citizens.

Mrs. May Pynchon, executive secretary of the Florida Tuberculosis and Health Association, is chairman of the Legislative Committee responsible for developing and carrying out the regional legislative conferences.

A REPORT WITH STYLE

The Commission on Financing of Hospital Care issued its first *Progress Report* in January, 1953, in an easy to handle, pocket-size format. Type and paper make it easy to read.

The report is divided into background, method of attack, and progress. Each subject is dealt with briefly and concisely. The commission's first study is on "Third-Party Payments for Hospital Care"; material for it has been gathered and tabulated and was used in a Third Party Workshop Conference held in January under the auspices of the American Hospital Association. This first study serves as the model for the series of technical studies on which it is expected that the citizens of the United States will make their decisions on the commission's recommendations. Commission on Financing of Hospital Care, 1020 North Rush St., Chicago, 11, Ill.

MISERY OF SEGREGATION IN HOSPITALS

The Untouchables, with the subtitle, "The Meaning of Segregation in Hospitals," is a booklet of moving stories and illustrations of the human suffering incident to racial segregation in hospitals. Injured persons shuttled back and forth from town to town and dying on the way, newborn babies dying without care because no "Negro" beds are available, all this in spite of the fact that more than three-fourths of reporting hospitals admit Negroes, but almost entirely on a segregated basis with fixed quotas. *The Untouchables* is published by and available from the Southern Conference Educational Fund, 822 Perdido St., New Orleans 12, La.

PSYCHIATRIC CLINIC NEEDS

The Southern California Society for Mental Hygiene has just completed a survey of facilities for low-cost psychiatric clinic care in Los Angeles County. The report of the survey, *Low Cost Psychiatric Clinic Care in Los Angeles County, 1952, Community Report*

No. 1, outlines briefly actual and needed levels of participation by the professional community. The particular needs of children are stressed with a salutary emphasis on positive accomplishments to date.

Both short- and long-term recommendations are offered in practical terms. Reference is made to the sources of the standards suggested. This 8-page pamphlet is straightforward, understandable, and an indication of what a mental hygiene society can do in a practical way. It is useful primarily to those in the community already interested in mental health, but is not without its interest for others.

Southern California Society for Mental Hygiene, 3067 West Seventh St., Los Angeles 5, Calif.

A GOOD CHRONIC ILLNESS BEGINNING

New Jersey has a Chronic Illness Act, passed in April, 1952, which creates a Division of Chronic Illness Control in the State Department of Health. Among the duties laid upon the department are "joint discussion of the general problem of the chronic sick with representatives" of a long list of state and local, voluntary and official, professional and citizen agencies, "for the purpose of formulating an adequate program for dealing with the problem of the chronic sick."

By way of discharging this duty, the Governor's Conference on the Prevention of Illness was held in Trenton on December 17, 1952. The Proceedings are published in the March, 1953, *Health Views* of the New Jersey Department of Health. Here is an important document, particularly for other states that are exploring ways of dealing with problems both of prevention and rehabilitation as related to the chronically ill. Not only were specific conditions such as cancer, arthritis, heart disease, and others discussed, but also health education, nutrition, problem drinking, rehabilitation, convalescent care, homemaker service, the physician's responsibility.

Copies of the Proceedings issue are being made available outside of New Jersey. New Jersey State Department of Health, Trenton.

A CASE OF "HOIST BY HIS OWN PETARD"

The National Society for Medical Research, which is the anti-antivivisectionist crusading association, has done an excellent job of letting the antivivisectionists condem themselves by their own deeds. Under the title of "Fan Mail for Scientists," it has reproduced on a large display sheet several dozen of the letters that have been received by the society from vocal vivisectionists. They are a revealing melange of name calling, hysteria, and pseudo-science that completely vitiates any influence they might have on reasonable persons. "A simple diet of grapes will cure cancer," is among the mildest of scientific theories, "degenerates," among the mildest of name calling.

Anton J. Carlson, M.D., president of the society explains the use of this device to let the public judge for itself, because of the series of violent physical attacks on scientists, the murder of a secretary in the offices of the American Physical Society, the attempt to murder Dr. Harry Goldblatt of Cedars of Lebanon Hospital in Los Angeles, threats by antivivisectionists on the lives of the president and two members of the University of Illinois faculty. The *Fan Mail* should be useful in any community that is having antivivisectionist trouble, 208 N. Wells St., Chicago.

A CITY LOOKS TO THE FUTURE

A Future for Nashville is a report of the Community Services Commission for Davidson County and the City of Nashville, which was created by the Tennessee General Assembly of 1951. It covers the whole gamut of city services. The

recommendations on health service, in the study of which Roscoe P. Kandle, M.D., collaborated, are a single health department to serve both the city and county, an enlarged board of health with other representation as well as medical, increased use of engineering services in the department, and increased amount and effectiveness of public health nursing services.

It is interesting to note that there are recommendations for single jurisdictions, also for hospital care for indigents, public schools, and public welfare.

The commission also has published a brief pamphlet "Summary of Findings and Recommendations" of *A Future for Nashville*. Neither document indicates how they may be secured but inquiry to the Community Services Commission, Nashville, Tenn., should bring results.

ANNUAL REPORTS

Your Public Health Purchase is the 1950–1951 report of the Colorado State Department of Health. It is called a "Catalog of Public Health" and shows Colorado citizens what they got for their public health services in 1950–1951, and what they want in future years. On the theory that public health, like other commodities, comes in various qualities and quantities the biennium report indicates a belief in the state health administration that its work has been good both in quality and quantity. But for each program, the report shows what could be better and best—were money and personnel available.

The report is well printed on a good grade of paper, with clear-cut photographic illustrations.

The Fight for Life is the thirty-ninth annual report of the National Safety Council. It is the kind of report executives dream about—if only there were enough money to do such a handsome one. But the report has been designed with imagination and taste as well as expense, for the purpose both of making an accounting to those who have supported the council in work, good will, or funds, and of inspiring others to join the ranks of those who are saving human lives lost needlessly.

The report estimates that during the 40-year history of the council, the reductions in accident death rates represent a saving of half a million lives. The next decade is expected to bring even greater savings in lives.

The report is divided into various sections such as industrial safety, traffic safety, home safety, and others with progress achieved in each.

This is a report well worth study both for its content and as an example of reporting stewardship. Ned H. Dearborn is president of the National Safety Council, 425 N. Michigan Ave., Chicago, Ill.

Our Responsibility a Greater Usefulness is the annual report of the Association for the Aid of Crippled Children for the year ending March 31, 1952. During that year the association's board approved 18 grants totaling more than a quarter of a million dollars for medical and nonmedical research in crippling diseases and conditions. The director, Leonard W. Mayo, says, "The unique combination of service, demonstration, interpretation, education, and support of research that now comprises the association's program gives a strategic vantage point from which to view trends and needs in the care and treatment of handicapped children." 580 Fifth Avenue, New York 36.

Summing up for 1952 is the subject of the December, 1952, *Michigan's Health*, the monthly bulletin of the State Health Department. In 12 pages, several photographs, and well chosen subheads, the story of the health department's activities is told without fanfare and without an expensive special report.

Among the significant items reported is the consolidation of four-bicounty or single-county local health departments into two tricounty units, each serving a population of more than 50,000. The nursing shortage is highlighted by the fact that the number of full-time nurses employed in the state are 11 per cent fewer than in 1942, increasing the ratio of population per nurse from 5,500 to 7,500. This report is well worth study both for its suggestiveness as to areas in which a state department of health finds usefulness and as one type of successful annual report. Albert E. Heustis, M.D., is state health commissioner, Lansing, Mich.

WORTH ACQUIRING

A Selective Bibliography on Cerebral Palsy and *Books and Pamphlets on Rehabilitation* have recently been published by the National Society for Crippled Children and Adults. The former is an author-subject index to literature in the loan and reference collection of the society's library. Literature which is not available from local sources may be borrowed from the library.

The rehabilitation bibliography includes list prices and publishers' addresses for both books and pamphlets. All but one or two have appeared later than 1945 and the great majority later than 1949.

National Society for Crippled Children and Adults, 11 South La Salle St., Chicago 3, Ill. Single copies free.

101 Questions and Answers About Your Child's Heart and Your Own has been reprinted by the American Heart Association from *Parents' Magazine*. These are some of the questions asked most often, particularly by the layman, about the different kinds of heart disease.

Heart Disease in Children, also prepared by the American Heart Association, "offers a heartening note for parents, teachers, and others concerned with the problems of child health." The booklet gives a summary of what is presently known about the prevention and treatment of rheumatic fever, the treatment of heart disease, and the correction of congenital heart defects.

Copies and additional information from local or state heart associations, or the American Heart Association, 44 East 23rd St., New York 10, N. Y.

Handbook for Health Instruction in Oregon Elementary Schools is a revision of a manual on health instruction in elementary schools first issued in 1945. The present volume, published by the Oregon State Department, has been prepared by a committee representing public schools, colleges, public health societies, the state medical and dental societies, and the State Health Department. State Department of Education, Salem, Ore. No information as to price or out-of-state distribution.

Nutrition Teaching Aids for Professional People have been revised once more by the Nutrition Association of Greater Cleveland. They are a set of 20 food value charts on 3½ by 6½ inch cards useful for teaching nutrition in interviews. Fifteen of the cards, with colored bars, illustrate comparative food values of common foods; five are designed especially for teaching expectant mothers. 1001 Huron Road, Cleveland 15, Ohio; 50¢ set; 40¢ in quantities of 15 sets or more.

BOOKS AND REPORTS

All reviews are prepared on invitation. Unsolicited reviews cannot be accepted.

The Accreditation of North American Schools of Public Health—*By C.-E. A. Winslow. Committee on Professional Education, APHA. New York: American Public Health Association,* 1953. 44 pp. Free distribution.

Since 1945, when the program for the Accreditation of Schools of Public Health in North America began, annual summaries have been prepared for limited circulation showing the main facts about faculties of the schools, teaching budgets, physical facilities, opportunities for practical field work, enrollment qualifications, degrees offered, and the research programs of each of the schools. The number of requests for these reports arising from overseas sources has been notable. In no other publication is it possible to find compressed into a small compass such facts, especially useful from the standpoint of those who are planning new schools of public health or new courses.

Professor Winslow has now consolidated his reports for the first six years of this accreditation program and the report is available for distribution on request as a service of the Committee on Professional Education of the APHA.

In these days, when the prevailing methods of accreditation are under fire, it is gratifying to be able to report at least one system which began at the unanimous request of the Association of Schools of Public Health and has been continued during a period of notable improvement in the facilities and character of the instruction available. Graduate education in public health has fortunately avoided the experience through which medical education went when the quality of instruction fell to an amazingly low point, requiring four decades of effort to raise the standards until all the institutions in the United States teaching medicine could be approved. It is believed that after the current academic year there will be no courses for the M.P.H. offered in the United States, except from fully accredited institutions. All of this process has been achieved without financial cost to the schools. For the first three years the program was sustained by a grant from the Commonwealth Fund, since which time it has been carried from the general budget of the APHA.

To those who have watched the historical development of these graduate courses in the United States it is indeed gratifying to see reflected in this report the high levels maintained. There is still too great a diversity of degrees, but there can be no question of progress in the direction of reducing the number and especially in raising the prestige of the M.P.H. This report deserves the wide reading that it will receive.

REGINALD M. ATWATER

A Survey of Housing Research in the United States—*Housing and Home Finance Agency. Conducted by the Building Research Advisory Board, National Research Council, National Academy of Sciences. Washington, D. C.: Gov. Ptg. Office,* 1952. 723 pp. Price, $3.00.

This first compilation of housing research to be published in the United States was undertaken primarily to assist the housing industry by providing information on current investigations made under the auspices of educational institutions, scientific foundations, pro-

fessional societies or trade associations, and commercial laboratories; and to indicate the facilities available for further research.

The survey was conducted by questionnaire to disclose more than 1,000 projects in progress or recently reported by 200 organizations presently engaged in housing research. More than two-thirds of the projects are in the fields of technological research, classified under such headings as building materials, construction methods, dwelling design, and mechanical equipment.

Nearly one-third of the projects are in nontechnological fields, classified under such headings as finance, housing hygiene, housing regulation, and varied studies to yield social and psychological data. Actual studies ranged from simplification of plumbing in small homes to financing middle-income housing.

So comprehensive a survey of housing research is not only valuable for the industry, it is equally valuable for those engaged in research since indication is given of the major fields in which research is under way. Disclosure of gaps in total research and indication of duplication of effort provide a means for closer coordination of activities and cooperation among organizations now engaged in housing research.

ELEANOR WATKINS

The Parasites of Domestic Animals—*By Thomas W. M. Cameron. Philadelphia, Pa.: Lippincott*, 1952. 420 pp. Price, $7.00.

This is the only American manual of veterinary parasitology that includes the protozoa, the helminths and the arthropods. It is written by the foremost parasitologist in Canada, primarily for the use of students in veterinary medicine. Public health workers will find here the essential facts for those parasites affecting both man and domestic animals.

The text is brief, of necessity, in a volume of this size; only those parasites of commoner occurrence are dealt with more than casually. There are numerous illustrations, the line drawings being superior in reproduction to most of the photographs. It is debatable whether a veterinary parasitology will best serve its purpose when written on a taxonomic basis, as is this book, or, from the standpoint of systems of organs and hosts. Zoological classification certainly should receive attention in college courses, but, properly or not, the field worker thinks of and finds parasites and their lesions in or on certain body structures of known hosts.

In discussing clinical diagnostic technics, the author expresses adverse opinion of flotation methods for the detection of helminth ova and coccidial oocysts; methods which are widely used, at least in the United States. Some 130 parasitic species which do not, as yet, occur in North America, are described or mentioned. E. A. BENBROOK

A Survey of the Literature of Dental Caries—*Prepared for the Food and Nutrition Board, National Research Council under the Supervision of the Committee on Dental Health; P. C. Jeans, chairman. Washington, D. C.: Publications Office, National Research Council*, 1952. 567 pp. Price, $3.00.

This long awaited book fills a real need for a review and reference book of the literature on dental caries. As such it should prove invaluable to those who are beginning the study of dental caries, and it will also be very useful to experienced investigators of the problem. The book opens with a statement on the origin of the survey by L. A. Maynard in which the fact that it was 10 years in the making is pointed out. There is a brief philosophical foreword by A. L. Johnson. This is followed by an introductory review by Toverud which, among other things, contains an interesting analysis of data on growth, dental caries, and

sugar consumption of Norwegian children in relation to the recent war. The chapter on "Experimental Caries in Animals" by Cox capably summarizes what has been learned about caries in white rats, hamsters, and cotton rats up to 1950. In the next chapter on "Prevalence of Dental Caries" we find data compared on caries attack rates of different age groups, populations, races, etc., and also the need for more uniform dental examination methods to secure comparable data in different studies is pointed out.

In the chapter on "Pathology of Dental Caries" Bodecker states that the "Vitalistic aspect of caries—does not represent the view which is presently popular," and proceeds to explain evidence, including many of his own pictures and drawings, to make the "vitalistic view" more popular.

The chapter on "Oral Environment and Dental Caries" by Cox is particularly valuable in that accurate quotations of the original literature are generously made and some subsequent misquotations corrected. The chapter on "Fluorine and Dental Caries," again by Cox, gives a wealth of references, which in retrospect become very interesting. The final chapter "Nutrition and Dental Caries" by Shaw includes references to a wide variety of nutritional factors which at one time or another were thought to influence caries.

ROBERT M. STEPHAN AND H. T. DEAN

Confidentiality of Public Assistance Records. 1953 Legislative Problems: No. 2—*By Margaret Greenfield. Bureau of Public Administration. Berkeley, Calif.: University of California,* 1952. 50 pp. Price, $1.25.

Physicians and other health practitioners have historically recognized the confidential relationship which exists between them and their patients. The same concept has also developed in other professions where a similar relationship of mutual trust and confidence is necessary to successful practice. Among these is the field of social work. This basic principle was written into federal and state laws establishing the federally financed public assistance programs. In 1951 there was widespread questioning of this principle, with the result that federal law requiring confidential records was changed to permit states and localities to make public the names of persons receiving assistance under the federal-state programs.

Miss Greenfield, at the request of California legislators, has made a thorough study of this development and its effects. She starts with a history of the movement, carefully giving the arguments both for and against the opening of welfare records to public inspection. She lists the nine states which have passed such legislation (Alabama, Georgia, Illinois, Indiana, Kentucky, Louisiana, Mississippi, South Carolina, and Virginia) and describes its content and procedure. She then tells something of the experience in these states.

Proponents of the publication of relief records have offered this action as a method which will eliminate dishonest persons, prevent fraud, and act as a deterrant upon applicants, thus easing the load upon the taxpayer. Miss Greenfield has included much statistical information relating to the effect upon caseloads of opening the records. She concludes: "To what extent people in genuine need do not apply and to what extent chiselers are frightened off can never be known." Her statistical tables, however, seem to show no startling evidence of reductions due to these new laws.

Although it is the policy of the agency sponsoring the study not to make recommendations the author makes the following conclusion: "On the basis of the statistical record so far available, it may be safely said that the device of public

inspection offers no definitive solution to the problems raised by heavy expenditures for public assistance. How then can the taxpayer guard against alleged chiseling on the part of the welfare recipient and laxness on the part of the welfare agency? More precisely written welfare laws, sounder administration of current laws with adequate social work staffs, and citizen boards to review administrative action have all been suggested." The study is one of the few objective ones which have been made of this subject and is well worth examination by anyone interested.

PEARL BIERMAN

For Boys Only: The Doctor Discusses the Mysteries of Manhood—*By Frank Howard Richardson. Atlanta, Ga.: Tupper and Love,* 1952. 87 pp. Price, $2.75.

This book is written for boys "about twelve to fourteen" by a pediatrician who is an editor and author evidently with much experience in work with boys. In the form of chapel talks to them, he answers their questions and at campfire meetings or during fishing trips and other informal gatherings he gets very easily into elementary discussion of sexual maturing, the reproductive process in both sexes, and common early adolescent problems of sex behavior. He also deals with other topics such as smoking, "getting along with Dad," drinking, and speeding.

As a whole he treats these latter matters very well and much better than the former. In trying to deal with the former simply, he has fallen at times into the pitfalls of oversimplification, inaccuracy, and an indefiniteness, which leaves too much room for unsound inferences. The unfertilized egg is not normally "thrown out of the body." Gonorrhea is not contracted by kissing as might easily be inferred from "kissing . . . can give you either of the two most serious venereal diseases." Semen is not the product solely of "the storage tanks," the seminal vessels. The impression ought not to be given that syphilis is easily diagnosed in "a few minutes questioning and a brief but careful examination." Neither should a boy be given to understand that he "knows by instinct" that masturbation "is something he ought not to do."

In this reviewer's judgment the defects of the book so far outweigh its often very sound material that it cannot be recommended for its intended readers. We must still look for a better blending of simplicity, accuracy, specificness, and inspiration.

ROY E. DICKERSON

Noise—Causes, Effects, Measurements, Costs, Control. *University of Michigan School of Public Health, Ann Arbor, Mich.: University of Michigan Press,* 1952. 192 pp. Price, $5.00.

The title of this book is quite descriptive. Compiled within one cover is information on almost all aspects of sound. For instance, one can find a good description of sound and its behavior, see how it is measured, find out how it affects man, and then read about the methods used in its control. Combined here is a study of physics, anatomy, physiology, and engineering as related to sound.

Noise is a compilation of lectures on the acoustical spectrum presented at the University of Michigan. Over 20 authors presented papers in their particular specialties relating to sound and its control. The papers deal with the physical properties of sound, measurement of sound, ultrasonics, mechanical vibration, biophysics of sound perception, effects of sound, and sound control in that order.

The excellent quality and broad scope of the papers compiled in this publication make it a useful reference book. Many of the subjects covered have wide application in the broad field of public health.

RALPH J. JOHNSON

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

RAYMOND S. PATTERSON, PH.D.

Propaganda to Exhortation to Guidance—The occasion of a tenth anniversary inspires the editor of the (Br.) *Health Education Journal* to take a hard and analytic look at the evolution of indigenous health educational processes. As this is a job our English confreres can be counted on to do so well, the editorial is commended most earnestly to all. If we could be induced to follow the British practice only far enough to call our native workers "health educationists" something would be gained.

ANON (Unnamed Editorial). *Health Ed. J.* 9, 1:1 (Jan.), 1953.

Lethal Smog—"In the past hundred years only the peak week of the influenza pandemic of November, 1918, produced more deaths over the expected normal than did the man-made fog of two months ago. Even the cholera epidemic of 1866 could not quite equal it." If you don't itch to read the rest of the item then your bump of curiosity must be flat indeed.

ANON. Fog Over London. *M. Officer* 89, 17: 73 (Feb. 14), 1953.

Preservice Training — Fourteen training courses for physicians, twelve for nurses, one for nutritionists, two for educators, and a wide variety of others for technicians, sanitarians, water works operators, etc., constitute an impressive program for improving the performance of health workers.

AMOS, F. B. The Public Health Training Program of New York State. *Pub. Health Rep.* 68, 3:295 (Mar.), 1953.

Nature Isn't So Wonderful!—Another answer for the antifluoridationists. Thanks to the addition of fluorides to the Grand Rapids City water supplies, the present crop of 6-year-olds enjoys a two-thirds reduction in dental caries—over that of the preceding unfluoridated generation. Grand Rapids children now have as healthy teeth as those in Aurora where Mother Nature all along has given water the same concentration of fluorine.

ARNOLD, F. A., JR., *et al.* Effect of Fluoridated Public Water Supplies on Dental Caries Prevalence. *Pub. Health Rep.* 68, 2:141 (Feb.), 1953.

Tele-VISION—One of the few health people who have tried a hand at telecasting sets forth some of the possibilities inherent in, and some of the merely-hopes for, educational television. A sentence sums up the findings of his experience. "To succeed in television, the show's the thing—and not warmed over radio or out-dated film."

BAUER, W. W. Television in Health Education. *J. Health & Phys. Educ.* 24, 3:8 (Mar.), 1953.

On Making Sciences Intelligible—Suggested here—and not entirely with whimsical intent—is the need for a sort of Nobel Prize for the integrator and interpreter of science who might thus be enabled to serve his fellows perhaps better than the researcher who merely adds one more morsel to the already indigestible feast of facts.

BUSH, V. "We are in Danger of Building a Tower of Babel." *Pub. Health Rep.* 68, 2: 149 (Feb.), 1953.

Pregnant Words—Not until medicine is practiced on a fee-per-capita basis will the full potential of medical practice be turned to preventive medicine, and only then will the public

health services be both encouraged and welcomed. So says the administrative head of a (fee-per-service) rural group.

ESSELSTYN, C. B. Group Practice with Branch Centers in a Rural County. *New England J. Med.* 248, 12:488 (Mar.), 1953.

"Bifidus Factor"—Just how convincing all this will prove to the mother reluctant to nurse her baby is problematic. But is seems that in human milk there is a factor (virtually lacking in cows milk) that causes *L. bifidus* to flourish in the infant's intestine and so to discourage the mixed flora found in the bottle-baby's inwards—a mixture that appears not to be in the best interests of his resistance to infections.

GYORGY, P. A Hitherto Unrecognized Biochemical Difference Between Human Milk and Cows Milk. *Pediatrics* 11, 2:98 (Feb.), 1953.

Atoms and the People's Health—In the face of the West's tremendous industrial expansion and the development of radically new industrial processes will western public health continue along in the "basic six" tradition or will it move to meet insistent eventualities? The questions the writer asks of the West might be turned with equal pertinency to the East.

HALVERSON, W. L. Public Health in the Western States. *Pub. Health Rep.* 68, 3:323 (Mar.), 1953.

Hopeful Recounting—In clear, nontechnical language each phase of the tremendous, modern cancer research program is related step by step, by the one man who must be the best situated to see the business as a whole. Though false hopes must not be based on preliminary reports, he warns, recent progress indicates that science can—and will—find the answer to cancer.

HELLER, J. R. Recent Progress in Cancer Research. *Pub. Health Rep.* 68, 3:209 (Mar.), 1953.

Neither Success Nor Failure—As a representative of the Rockefeller Foundation in Great Britain, this American writer has made the most of his opportunities for observation to give us a description and assessment of the British Health Service. The account is characterized as the best exposition ever of this hotly debated subject.

PETERSON, O. L. National Health Service of Great Britain. *Pediatrics* 11, 2:179 (Feb.), 1953.

Rehabilitation Begins Early—"Hospitals complain that the chronically ill are responsible for their over-crowding, but they do little to provide the retraining services that will permit many of these patients to leave the hospital." This about sums up the problem that is being tackled intelligently in a group of New York institutions.

RUSK, H. A. Rehabilitation in the Hospital. *Pub. Health Rep.* 68, 3:281 (Mar.), 1953.

Unfinished Business—Taking stock of all the past successes—in preventing dietary deficiency diseases, improving national food supplies, and guiding people in establishing better dietary habits—leads this researcher to assume that "new health-affecting components of food will yet be discovered and that much will be learned about their function."

SEBRELL, W. H. Nutrition—Past and Future. *Nutrition Reviews* 11, 3:65 (Mar.), 1953.

Like Voice From Past—Just for the record—and to be filed in the category of curiosa—are three reported (British) cases of scarlet fever caused by *Staphylococcus aureus.*

SIMPSON, J. Staphylococcal Scarlet Fever. *M. Officer* 89, 8:85 (Feb. 21), 1953.

Cytoplasmic Fragments?—You know who rush in where angels wouldn't. Well here goes! It seems that if chick embryos are infected with influenza virus the tissue cells may develop superficial filaments which appear—in electron micrographs—to break up into

fragments that resemble the often-photographed influenza virus. Exactly what all this may imply isn't entirely clear (to me), but the micrographs certainly will provoke a lot of speculation.

WYCKOFF, R. W. G. Formation of the Particles of Influenza Virus. *J. Immunol.* 70, 2:187 (Feb.), 1953.

Confirmatory, They Say — Questionnaires were sent to the families of physicians who died of cancer in recent years. There were many more heavy smokers among the lung cancer cases than among the victims of other types of cancer.

WYNDER, E. L., and CORNFIELD, J. Cancer of the Lung in Physicians. *New England J. Med.* 248, 11:441 (Mar. 12), 1953.

(See also) BRESLOW, L. Occupational Factors in Lung Cancer. *Pub. Health. Rep.* 68, 3:286 (Mar.), 1953.

If additional information is desired regarding the articles listed in this Bibliography, please communicate directly with the publications in which they appear; the addresses are furnished for your convenience.

Health Ed. J. (Health Education Journal), Central Council for Health Education, Tavistock House, Tavistock Square, W.C. 1, London.

J. Immunol. (Journal of Immunology), American Association of Immunologists, Mt. Royal and Guilford Avenue, Baltimore 2, Md.

J. Health & Phys. Educ. (Journal of Health and Physical Education), American Association for Health, Physical Education and Recreation, 1201 16th St., N.W., Washington, D. C.

M. Officer (Medical Officer), Chronicle House, 72/78 Fleet Street, London, E.C. 4.

New England J. Med. (New England Journal of Medicine), Massachusetts Medical Society and the New Hampshire Medical Society, 8 The Fenway, Boston 15, Mass.

Nutrition Reviews. Nutrition Foundation, Inc., Chrysler Building, New York 17, N. Y.

Pediatrics. American Academy of Pediatrics, 301–327 East Lawrence Avenue, Springfield, Ill.

Pub. Health Rep. (Public Health Reports), Superintendent of Documents, Gov. Ptg. Office, Washington, D. C.

BOOKS RECEIVED

Listing in this column acknowledges the receipt of books and our appreciation to the senders. Space and the interests of readers will permit review of some, but not all, of the books listed.

ACCREDITATION OF NORTH AMERICAN SCHOOLS OF PUBLIC HEALTH. Committee on Professional Education, APHA. New York: American Public Health Association, 1953. 44 pp. Free.

ADMINISTRATIVE RESIDENCY IN THE HOSPITAL. American College of Hospital Administrators. Chicago, Ill.: American College of Hospital Administrators, 1953. 59 pp.

ADVANCES IN CANCER RESEARCH. Edited by Jesse P. Greenstein and Alexander Haddow. New York: Academic Press, 1953. 590 pp. Price, $12.00.

AMEBIASIS. PATHOLOGY, DIAGNOSIS AND CHEMOTHERAPY. Hamilton H. Anderson, Warren L. Bostick, and Herbert G. Johnstone. Springfield, Ill.: Thomas, 1953. 431 pp. Price, $11.50.

ANALYSIS IN DENTAL RESEARCH. Neal W. Chilton. Washington, D. C.: Office of Technical Services, U. S. Department of Commerce, 1953. 218 pp. Price, mimeo: $3.00.

ANUARIO DE EPIDEMIOLOGIA Y ESTADISTICA VITAL 1949. Caracas, Venezuela: Ministerio de Sanidad y Asistencia Social, 1952. 681 pp.

BLOOD CELLS AND PLASMA PROTEINS, THEIR STATE IN NATURE. Edited by James L. Tullis. New York: Academic Press, 1953. 436 pp. Price, $8.50.

CARE OF THE MEDICAL PATIENT: A TEACHER'S MANUAL. Margene O. Faddis and Ellen Gwendolyn Fortune. New York: McGraw-Hill, 1953. 27 pp. Free.

CHILD DEVELOPMENT. William E. Martin and Celia Burns Stendler. New York: Harcourt, Brace, 1953. 519 pp. Price, $6.50.

DEMOGRAPHIC YEARBOOK 1952. UNITED NATIONS. New York: Columbia University Press, 1952. 518 pp. Price, $7.50, cloth; $6.00 paper.

DIRECTORY OF PSYCHIATRIC CLINICS IN NEW YORK STATE. Compiled by the New York State Mental Health Commission as of October 1, 1952. Albany, N. Y.: Department of Mental Hygiene, 1952. 153 pp.

ENCYCLOPEDIA OF ABERRATIONS. Edited by Edward Podolsky. New York: Philosophical Library, 1953. 549 pp. Price, $10.00.

EPIDEMIOLOGY AND CONTROL OF ENDEMIC SYPHILIS. REPORT ON A MASS-TREATMENT CAMPAIGN IN BOSNIA, WHO. E. I. Grin. New York: Columbia University Press, 1953. 93 pp. Price, $1.00.

EVALUATING RESEARCH AND DEVELOPMENT. Edited by Irving R. Weschler and Paula Brown. Los Angeles, Calif.: University of California, Institute of Industrial Relations. 104 pp.

FAMILY MEDICAL ENCYCLOPEDIA (COLLINS). Edited by George Somerville. New York: John De Graff, 1953. 694 pp. Price, $5.00.

GUIDE FOR NATIONAL STUDIES OF NURSING RESOURCES. Margaret G. Arnstein. WHO Publication. New York: Columbia University Press, 1953. 36 pp. Price, $.20.

GUIDE FOR THE DEVELOPMENT OF FIELD SERVICE FOR EXECUTIVES AND FIELD CONSULTANTS. New York: National Tuberculosis Association, 1953. 73 pp.

HEALTH INSURANCE IN GREAT BRITAIN 1911–1948. Social Security Series Memorandum No. II. Ottawa, Canada: Research Division, Department of National Health and Welfare, 1952. 163 pp.

MALARIA TERMINOLOGY. REPORT OF A DRAFTING COMMITTEE APPOINTED BY WHO. Sir Gordon Covell, Paul F. Russell, and N. H. Swellengrebel. New York: Columbia University Press, 1953. 82 pp. Price, $1.00.

PERMANENT AND TOTAL DISABILITY AID. Margaret Greenfield. Berkeley, Calif.: Bureau of Public Administration, University of California, 1953. 54 pp. Price, $1.25.

POLYGLOT MEDICAL QUESTIONNAIRE. S. Chalmers Parry. London: H. K. Lewis, 1953. 62 pp. Price, 12/6d. net.

PRACTICAL PSYCHOLOGY. Karl S. Bernhardt (2nd ed.). New York: McGraw-Hill, 1953. 337 pp. Price, $3.75.

PROBLEMS OF INFANCY AND CHILDHOOD. TRANSACTIONS OF THE SIXTH CONFERENCE, MARCH 17–18, 1952. Edited by Milton J. E. Senn. New York: Josiah Macy, Jr. Foundation, 1953. 160 pp. Price, $2.50.

SANITARY MILK CONTROL AND ITS RELATION TO THE SANITARY, NUTRITIVE, AND OTHER QUALITIES OF MILK. A. C. Dahlberg, H. S. Adams, and M. E. Held. Washington, D. C.: National Academy of Sciences—National Research Council, 1953. 174 pp.

SEWERAGE AND SEWAGE TREATMENT. Harold E. Babbitt (7th ed.). New York: Wiley, 1953. 674 pp. Price, $8.00.

SEXUAL HARMONY IN MARRIAGE. Oliver M. Butterfield. New York: Emerson Books, 1953. 96 pp. Price, $1.50.

SOLITUDE AND PRIVACY. Paul Halmos. New York: Philosophical Library, 1953. 181 pp. Price, $4.75.

SOVIET IMPACT ON SOCIETY. Dagobert D. Runes. New York: Philosophical Library, 1953. 202 pp. Price, $3.75.

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ASSOCIATION NEWS

EIGHTY-FIRST ANNUAL MEETING
AMERICAN PUBLIC HEALTH ASSOCIATION
NEW YORK, N. Y., NOVEMBER 9–13, 1953

APPLICANTS FOR MEMBERSHIP

The following individuals have applied for membership in the Association. They have requested affiliation with the sections indicated.

Health Officers Section

J. A. Bennett, M.D., McDowell County Health Dept., Welch, W. Va., Health Officer

Daniel G. Bernoske, M.D., 731 Pine St., Michigan City, Ind., Sec'y, Board of Health

Francisco Bravo, M.D., The Bravo Clinic, 735 S. Soto St., Los Angeles 23, Calif., Director

H. Lowell Butters, M.B., Madison County Health Dept., Canton, Miss., Director

M. K. Dehnel, M.D., D.P.H., Dept. of Public Health, Assiniboia, Saskatchewan, Canada, Medical Health Officer

Rex E. Graber, M.D., M.P.H., 417½ N. Bridge St., Chippewa Falls, Wis., District Health Officer, State Board of Health

W. Sinclair Harper, M.D., C.M., D.P.H., 1711-A Edgewood Road, Towson, Baltimore 4, Md., Health Officer, Eastern Health District

Harold S. Jorgensen, M.D., Southeast Florida Tuberculosis Hospital, P. O. Box 1411, Lantana, Fla., Resident Physician

Emilio Lopez, M.D., Unidad Sanitaria San Cristobal, Tachira, Venezuela, S. A., Medico Adjunto en Unidad Sanitaria San Cristobal, Ministerio de Salud Publica

Charles J. Mathes, M.D., 116 Lemon St., Palatka, Fla., Director of Health, Putnam and Flagler Counties, State Board of Health

William H. Melton, M.D., P. O. Box 437, Jackson, Ala., Physician, Private Practice

Wilma C. Sacks, M.D., County Health Unit, Fayetteville, Ark., Medical Director, 6th District

Lawrence L. Spitzer, M.D., 107 1st S. W., Ardmore, Okla., Director, Carter County Health Dept.

Col. Lester P. Veigel, M.C., 4630 23rd St., N., Arlington, Va., Chief, Resources Analysis Division, Office of the Surgeon General, USAF

Walter A. Werner, M.D., Gate City, Va., Director, Lee-Scott Health Dept.

George E. Whitson, M.D., 820 N. Washington, Madison, S. D., Physician and Surgeon

Laboratory Section

Virginia E. Brown, Ph.D., Marquette Univ., Biology Dept., Milwaukee, Wis., Teacher of Parasitology, Medical Entomology

Francis C. Coleman, M.D., 4823 Algonquin Road, Des Moines, Iowa, Director, Dept. of Pathology, Mercy Hospital

Elizabeth Collet, 7447 Olentangy River Road, R. D. No. 1, Powell, Ohio, Bacteriologist, Ohio Dept. of Health

George P. Gribkoff, 1930 Beverly Blvd., Los Angeles, Calif., Assoc. Public Health Chemist, State Dept. of Public Health

Edgar A. Guzman, Bronx Hospital, Fulton Ave. at 169th St., New York 56, N. Y., Bacteriologist

Percy A. Hill, Health Dept. Laboratory, Worcester 5, Mass., Chemist

T. A. Jennens, Gary Clinical Laboratory, 504 Broadway, Suite 639, Gary, Ind., Director

Gerd W. Lagarie, M.D., 615 N. Wolfe St., Baltimore, Md., Student, Johns Hopkins Univ., School of Hygiene

Barnet L. Rosenthal, M.S., 50 Nesmith St., Lawrence, Mass., Senior Chemist, Dept. of Public Health

John G. Schahfer, 818 C. Cherry Lane, East Lansing, Mich., Student, Michigan State College

Doris V. Smith, 555 Hempstead Blvd., Uniondale, N. Y., Bacteriologist, Meadowbrook Hospital

Tsugio Watanabe, 2515 Woodlawn, Boise, Ida., Medical Technician, Veterans Administration Hospital

Chester Wong, College of Medical Evangelists,

Loma Linda, Calif., Instructor in Parasitology, School of Tropical and Preventive Medicine

Statistics Section

Geneva J. Brown, 7401 W. Madison St., Forest Park, Ill., Statistician, Suburban Cook County Tuberculosis Sanitarium

Katherine T. Cantwell, 970 Washington Ave., Albany 3, N. Y., Junior Statistician, New York State Dept. of Health

Engineering Section

Osee L. Edge, 1220 Sunset Drive, Laurinburg, N. C., Sanitarian, Scotland County Health Dept.

Arthur W. Ferguson, 3148-D Brookwood Drive, Macon, Ga., Public Health Engineer, Georgia Dept. of Public Health

Peter Guala, 87–14 Eliot Ave., Rego Park, N. Y., Junior Public Health Engineer, Nassau County Dept. of Health

Edward J. Horschak, 5710 Schaefer Road, Dearborn, Mich., Superintendent, Division of Food and Sanitation, Dearborn City Health Dept.

James J. Hudgens, 125 Houston St., Mobile, Ala., Public Health Engineer and Director, Division of Sanitation, Board of Health

Robert L. King, 564 Eastern Ave., New Lexington, Ohio, Chief Sanitarian, Morgan-Perry County General Health District

Konstantine L. Kollar, American Embassy, Quito, Ecuador, S. A., Chief Construction Engineer, Institute of Inter-American Affairs, Health and Sanitation Division

A. Lyle Jones, Box 243, Sparta, N. C., Supervising Sanitarian, Alleghany-Ashe-Watauga District Health Dept.

Charles J. McCotter, Pamlico County Health Dept., Bayboro, N. C., Senior Sanitarian, Pamlico and Craven Health Departments

Juan Luis Radelat, Calle 30 No. 253 (altos) e/23y25 Vedado, Havana, Cuba, Director de Ingeniería Sanitaria, Ministerio de Salubridad y A. S.

Russell M. Sasnett, Route 3, Box 513, Jeffersonville, Ind., Project Engineer, General Electric Company

Donald J. Schliessmann, M. S., 1542 Tulane Ave., New Orleans, La., Sanitary Engineer, USPHS, Louisiana State Univ., Medical School

Jean J. Schueneman, Municipal Counts Bldg., Room 62, St. Louis, Mo., Chief, Sanitation-Rat Control and Mosquito Control, St. Louis Health Division

Roy J. Sewell, 501 Greene St., Augusta, Ga., Sanitarian, Richmond County Health Dept.

Industrial Hygiene Section

Charles J. Buhrow, M.D., 3833 Meadowlark Lane, Cincinnati 27, Ohio, Senior Asst. Surgeon, Division of Occupational Health, USPHS

Michael Gratch, M.D., 23 S. River St., Maytown, Pa., General Practice

Food and Nutrition Section

Asenath Cooke, M.S., State Board of Health, Nutrition Section, Raleigh, N. C., Public Health Nutritionist

James T. Hane, Box 234, St. Matthews, S. C., Sanitarian, South Carolina State Board of Health

Florence M. Hurst, M.S., 301 15th St., Rochester, Minn., Nutritionist, Rochester-Olmstead County Public Health

Virginia C. Jauch, 7102 S. Jeffery, Chicago 49, Ill., Nutritionist, Chicago Health Dept.

Jessie W. Kandiloros, M.A., 131 East 51st St., New York 22, N. Y., Diet Therapy Instructor, Skidmore College, Dept. of Nursing

Mildred Kaufman, M.S., 22 Windsor Ave., Melrose Park, Philadelphia 26, Pa., Nutrition Consultant, Visiting Nurse Society

Grace E. McGuinness, 775–19th Ave., San Francisco 21, Calif., Nutrition Consultant, Nutrition Service, State of California, Dept. of Public Health

Mary T. McInerney, M.S., 80 Willett St., Albany, N. Y., Apprentice Nutritionist, New York State Dept. of Health

Louise F. Owens, Concord Hospital, M. P. Unit, Concord, N. H., Head Dietitian

M. Constance Roddy, M.S., 4 E. 32nd St., Baltimore 18, Md., Consultant Dietitian, Maryland State Dept. of Health

Ruth Roth, M.P.H., 6200 5th Avenue, Apt. A-19, Pittsburgh 32, Pa., Chief, Office of Nutrition, Pittsburgh Dept. of Public Health

Maternal and Child Health Section

Elizabeth A. Morgan, R.N., Box 52, Klamath Agency, Ore., Clinic and Field Nurse, Dept. of the Interior, Office of Indian Affairs, Field Service

Jack L. Paradise, M.D., 4211 Noble St., Bellaire, Ohio, Pediatrician, Bellaire Clinic

Beulah Parker, M.D., 333 Cedar St., New Haven 11, Conn., Clinical Institute, Psychiatry and Public Health, Yale Univ.

Nina Ridenour, Ph.D., 15 W. 11th St., New York 11, N. Y., Sec'y, Ittleson Family Foundation

Walter S. Schachat, M.D., 39 E. 75th St., New York 21, N. Y., Physician

C. Warren Smith, M.D., M.P.H., 107-02 Inwood St., Jamaica, N. Y., Pediatric Residency, Bellevue Hospital

Mary E. Stout, 5 Ivy St., Room 200, Atlanta, Ga., Physical Therapy Consultant, Crippled Childrens Division, State Dept. of Public Health

John H. Waterman, M.D., 1400 S. W. 5th Ave., Portland 1, Ore., Director, Mental Health Section, Oregon State Board of Health

Public Health Education Section

John H. D. Blanke, P. O. Box 142, Barrington, Ill., Reporter and Editor, *The Barrington Courier-Review*

Lawrence A. Cappiello, M.S., 2183 Main St., Buffalo 14, N. Y., Educational Consultant, Western New York Committee for Education on Alcoholism, Inc.

Joan Cotler, 156 Fayette St., Bridgeton, N. J., Health Educator, Cumberland County Tuberculosis and Health Assn.

B. G. Garrison, M.P.H., 711 Ave. "B", Dodge City, Kans., Field Representative and Health Educator, Kansas Tuberculosis and Health Assn.

Emma F. Gilman, 2726 Dwight Way, Berkeley, Calif., Graduate Student, Univ. of California, School of Public Health

William A. Hopper, M.Ed., 2332 Pacific Ave., Atlantic City, N. J., Director of Health Education, Atlantic Visiting Nurse and Tuberculosis Assn.

Joseph H. Huff, M.S.P.H., District Health Dept., Chapel Hill, N. C., District Health Educator

Alexander H. Kemp, M.D., Box 132, Chautauqua, N. Y., Methodist Church Medical Missionary in Angola, Africa

T. A. Kleckner, M.A., 1101 W. 10th St., Indianapolis, Ind., Exec. Director, Indiana Heart Foundation

Mary J. Knapp, R.N., 3884 Prospect St., Mogadore, Ohio, Exec. Director, Visiting Nurse Service of Summit County, Akron, Ohio

James A. Lands, 1814 Airole Way, Austin, Tex., Member, Texas State Board of Control

Hanora M. McDonald, M.A., 520 Warren St., Hudson, N. Y., Exec. Sec'y, Columbia County Tuberculosis and Health Assn., Inc.

Walter S. Page, Jr., M.A., 55 E. State St., Columbus 15, Ohio, Exec. Sec'y, Ohio State Heart Assn.

Betty B. Reina, M.D., 508 North St., Chapel Hill, N. C., Educational Director, North Carolina Heart Assn.

Anne Snipes, M.S.P.H., 438 Northampton St., Easton, Pa., Health Education Secretary, Tuberculosis and Health Society

Gerald J. Specter, M.P.H., The Center, Room 301, Charleston, S. C., Public Health Educator, Charleston County Health Dept.

David Wachs, Beth Israel Hospital, Passaic, N. J., Superintendent

Sam R. Ward, 452 Ellicott Square Bldg., Buffalo 3, N. Y., Exec. Director, Western New York State Heart Assn.

Eldredge W. White, 5812 Central, Kansas City, Mo., Exec. Director, Missouri Heart Assn.

Public Health Nursing Section

Helen J. Bakhtiar, TEA Mission to Iran, APO 205, PM, New York, N. Y., Head, Nursing Section, Teheran Region, International Division of Health, FSA, Washington, D. C.

Joan L. Collette, 444 Gounday St., North Tonawanda, N. Y., Instructor, Public Health Nursing, Univ. of Buffalo, School of Nursing

Dorothy Conroy, 731 S. Conley St., College Park, Ga., Orthopedic Nursing Consultant, Crippled Childrens Division, State Dept. of Health

Bernice Crawford, R.N., Board of Health, City Hall, West Bend, Wis., City Public Health Nurse

Gwen Dekle, M.S., 12 Capitol Square, S.W., Atlanta, Ga., Consultant Nurse, Division of Occupational Health, Dept. of Public Health

Rose DeLuca, M.A., 40 Washington Ave., Dobbs Ferry, N. Y., Administrative Asst., Visiting Nurse Service of New York

Doris Diller, 5 Peter Cooper Road, N. Y. 10, N. Y., Assoc. Professor, Skidmore College

Ermengarda de Faria-Alvim, 74 Rua das Cravinas, Bila Valqueira, Rio de Janeiro, Brazil, S. A., Asst. Nursing Director, Special Service of Public Health, Training Section

Lillian Fischer, 838 Maryvale Drive, Cheektowaga 25, N. Y., Staff Public Health Nurse, Erie County Health Dept.

Lt. Helen Lee Gibson, N.C., U. S. Naval Hospital, Camp Lejeune, N. C., Supervisor, Out-Patient Dept.

Sadie Gladwin, 207 Baltimore Road, Rockville, Md., Chief, Division of Nursing, Montgomery County Health Dept.

Mary Jane Hickerson, R.N., Box 105, Boonville, Ind., Public Health Nurse, Warrick County

Violet Pruitt Hilliard, R.N., 109 Henry Ave., Anderson, S. C., Supervising Nurse, Anderson County Health Dept.

Elsie Ho, M.A., 4131 S. W. View Point Terrace, Portland 1, Ore., Mental Health Nurse Consultant, State Board of Health

Mary A. Ivanko, R.N., USPHS, 50 Seventh St., N. E., Atlanta 5, Ga., Regional Public Health Nurse Consultant

Violet L. Kinstle, 310 N. Clinton St., Iowa City, Iowa, Director of Nursing and Physical Therapy, Iowa State Services for Crippled Children, State Univ. of Iowa

Mildred Mabon, 101 West Taylor St., Savannah, Ga., District Orthopedic Nurse, Savannah District Crippled Childrens Division, State Dept. of Health

Bess T. MacCulloch, R.N., 600 Park St., Port Huron, Mich., Exec. Director, Visiting Nurse Assn. of Port Huron and Marysville

Kathleen M. Murphy, R.N., 200 Floyd St., Elkhart, Ind., Nurse Supervisor, Elkhart County Health Unit

Martha E. Rogers, R.N., M.A., M.P.H., 615 N. Wolfe St., Baltimore 5, Md., Student, Johns Hopkins Univ., School of Hygiene and Public Health

Anne LeRoy Rutherford, Apartado 2367, San José, Costa Rica, Public Health Nursing Consultant, Institute of Inter-American Affairs

Doris R. Schwartz, 1320 York Ave., New York, N. Y., Instructor in Out-Patient Nursing, New York Hospital, Cornell Univ., School of Nursing

Oma J. Smith, R.N., Hindmann, Ky., Field Advisory of Nurses, State Dept. of Health

Elizabeth G. Sullivan, R.N., Box 1492, Beckley, W. Va., Nursing Consultant, Area Medical Office, United Mine Workers

Eva W. Warren, M.P.H., 1204 Sixth St., Durham, N. C., Supervisory Nurse, Durham Health Dept.

Bernice W. Warrick, 1348 Wavash Ave., Pueblo, Colo., Nursing Supervisor, Pueblo City-County Health Dept.

Epidemiology Section

L. Otis Emik, Ph.D., 50 Seventh St., Statistics Section, Atlanta 5, Ga., Asst. Chief, Communicable Disease Center, USPHS, FSA

Gladys R. Heikens, 2402 11th Ave., Ct., Greeley, Colo., Director of Public Health Nursing Service, Weld County Health Dept.

Chitt Hemachudha, M.D., Veja Samnuk, 4/12 Rama I Road, Bangkok, Thailand, Chief, Communicable Disease Control Section, Dept. of Health

Rubens A. Leal, M.D., Caixa Postal 8099, Sao Paulo, Brazil, S. A., Assoc. Professor of Parasitology and Rural Hygiene in Faculty Hygiene and Public Health, Univ. of Sao Paulo

Major Hugh W. Randel, M.C., Gunter Air Force Base, Montgomery, Ala., Chief, Epidemiology Section, Dept. of Preventive Medicine

School Health Section

Mesbahuddin Ahmed, M.B., D.P.H., 36 Haji Osman Gani Road, Dacca, East Bengal, Pakistan, Asst. Director of Public Health, School of Hygiene Division, Public Health Directorate, East Bengal, Dacca

Naomi Allenbaugh, M.A., 201 Pomerene Hall, Ohio State Univ., Columbus 10, Ohio, Assoc. Professor

Irma B. Fricke, M.S., 1307 Oak Ave., Evanston, Ill., Supervisor of School Nurses, Evanston Community Consolidated Schools

Dorothy P. Gilliam, R.N., M.A., 898 Main St., South Glastonbury, Conn., School Nurse, Glastonbury Board of Education

Cletus A. Grothjan, M.D., 9 Ontario, Toledo, Ohio, Chief, Bureau of School Health, City of Toledo Health Dept.

Marjorie Losure, 4237 Monroe, Wayne, Mich., School Health Coordinator, Health Dept. and County Schools, Wayne County Schools Office

Bernice Ringman, 701 South Gramercy Drive, Los Angeles 5, Calif., Supervising Physical Therapist, State Dept. of Public Health

Jeanne E. Rybolt, M.D., 3007 Rackle, Indianapolis, Ind., School Health Consultant, Indiana State Board of Health

Charles H. Townes, M.D., Ph.D., Memorial Hospital, Virginia State College, Petersburg, Va., College Physician and Medical Director

Joanna Wells, Jr., M.S., 521 Malone St., Denton, Tex., Health Coordinator, Denton Public Schools, Teacher of Health Education

Dental Health Section

John W. Donlevy, D.D.S., P. O. Box 55, Brookdale, Calif., Public Health Dentist, Santa Cruz County

Wayne R. Ingalls, D.D.S., 241 N. Figueroa St., Los Angeles, Calif., Chief, Public Health Dentist, Los Angeles County Health Dept.

Alfred L. Jenkins, D.D.S., 26 N. 14th St., Allentown, Pa., Dentist

Harry K. Willits, D.D.S., 750 N. 10th St., Reading, Pa., Dentist

Medical Care Section

Col. Nicholas F. Atria, M.C., Hqs. 9th Air Force, Pope AFB, Fort Bragg, N. C., Air Surgeon

H. Allan Barth, 305 Bauch Bldg., Lansing, Mich., Exec. Director, Michigan Hospital Assn.

Julius L. Boiarsky, M.D., Boiarsky Memorial Hospital Assn., 56th and Noyes Ave., S. E., Charleston 4, W. Va., President, Chief Surgeon and Medical Director

Richard M. Carey, M.D., 147 W. 116th St., New York 26, N. Y., Medical Director, Upper Manhattan Medical Group

Bernard S. Collins, M.T., D.O., Court, Fayetteville, W. Va., Industrial Physician, Scotia Coal and Coke Company

Miriam L. Cooper, R.N., M.S., 16A Ashburton Place, Boston 8, Mass., Psychiatric Social Worker, Alcoholic Clinic, Peter Bent Brigham Hospital

Benjamin J. Darsky, M.A., 332 E. William, Ann Arbor, Mich., Research Assoc., Bureau of Public Health Economics, Univ. of Michigan, School of Public Health

Nora E. deCory, M.S.W., 643 S. 14th, Lincoln, Neb., Supervisor, Medical Social Work, State Services for Crippled Children

John P. Delaney, M.H.A., 998 Eddy St., San Francisco 9, Calif., Resident Assoc., San Fransico Committee on Hospital and Health Facilities

Eugene H. Dibble, Jr., M.D., P. O. Box 956, Tuskegee Institute, Ala., Medical Director, John A. Andrew Memorial Hospital

Gordon A. Friesen, 1427 "I" St., N.W., Washington 5, D. C., Senior Hospital Administrator, Memorial Hospital Assn. of Kentucky, Inc.

William S. Hoffman, M.D., PhD., 2501 Morse Ave., Chicago, Ill., Medical Director, Sidney Hillman Health Center of Chicago

Harry G. Horton, 6305 Yucca, Hollywood 28, Calif., Business Manager, William E. Branch Clinic

Roy Hudenburg, 2125 N. Huntington St., Arlington, Va., Assoc. Administrator, Memorial Hospital Assn. of Kentucky, Inc.

William Kosiak, M.D., Community Clinic, Two Harbors, Minn., Lake County Health Officer

Joseph M. Krainin, M.D., Bedford, N. Y., Private Practice

Isidor Melamed, 6120 Walton Ave., Philadelphia, Pa., Exec. Director, Union Health Center, New York, N. Y.

Frances D. Rievman, M.S.W., 3703 Cascadia Ave., Seattle, Wash., Senior Medical Social Worker, Washington State Dept. of Health

Clara E. Robison, M.S.W., Box 1629, Juneau, Alaska, Medical Social Consultant, Alaska Dept. of Health

Alfred E. H. Ruth, 922 Montgomery Ave., Apt. G-4, Bryn Mawr, Pa., Administrative Services Director, Philadelphia General Hospital

Carl K. Schmidt, Jr., M.A., 153 Hawthorne Ave., Elmhurst, Ill., Research Assoc., Commission on Financing of Hospital Care

Alfred L. Shapiro, M.D., 217 E. Parkway, Brooklyn 16, N. Y., Director, Eastern Parkway Medical Group

Robert Sigmond, M.A., 8317 Ingleside St., Chicago, Ill., Director of Fiscal Studies, Commission on Financing Hospital Care

James E. Spargo, M.D., 1432 Warwood Ave., Wheeling, W. Va., Private Practice

Marvin E. Walker, M.A., 1365 Wm. H. Taft Road, Cincinnati 6, Ohio, Public Relations Manager, Hospital Care Corp. (Blue Cross)

George M. Warner, M.D., The Castle, Beacon Hill Manor, Dobbs Ferry, N. Y., Senior Asst. Surgeon, USPHS, Montefiore Hospital, Home Care Dept.

Unaffiliated

Reverend Father Hector L. Bertrand, S.J., 325 St. Catherine Road, Outremont, Montreal 8, Quebec, Canada, President, Comite des Hopitaux du Quebec

Rome A. Betts, M.A., American Heart Assn, 44 E. 23rd St., New York 10, N. Y., Exec. Director

Charles D. Bird, City Health Dept., Charlotte 2, N. C., Public Health Advisor, USPHS

Desmond Blake, M.B., D.P.H., Burin Cottage Hospital, Burin, Newfoundland, Canada, Medical Officer, Dept. of Health

John J. Coffey, 601 City Hall, Buffalo, N. Y., Exec. Asst., Erie County Dept. of Health

Benjamin S. Fishman, M.D., 1 East 72nd Street, New York, N. Y., Medical Director, Amalgamated Laundry Workers Health Center

Hyman M. Forstenzer, M.S. in Ed., 9 Ramsey Place, Albany, N. Y., Asst. Director, New York State Mental Health Commission

William R. Harton, Jr., 3905 Grove Ave., Richmond, Va., Administrative Asst., City Dept. of Public Health

Lynwood M. Hopple, M.D., 871 Ursula St., Hoffman Heights, Denver 8, Colo., Chief, Mental Health Section, State Dept. of Public Health

Lyndon E. Lee, Jr., M.D., Dept. of Health, Bureau of Cancer Control, Santurce, Puerto Rico, Director

Edgar D. Mullgrav, 3758 10th Avenue, New York 34, N. Y., Student, Columbia Univ., School of Public Health

Lt. Colonel John R. Nettles, Jr., V.C., Box 811, Langley Air Force Base, Va., Command Veterinarian, Tactical Air Command

Julio Nigaglioni, D.D.S., Box 367, Yauco, Puerto Rico, Private Practice

Robert Perman, M.A., 2810 74th Ave., Landover, Md., Budget Analyst, USPHS

Salvatore F. Petti, Vestal Laboratories, Inc., 4963 Manchester, St. Louis 10, Mo., Bacteriologist

Lois M. Siegel, M.P.H., 468 Riverside Drive, New York 27, N. Y., Student, Columbia Univ., School of Public Health

STANDARD METHODS FOR THE EXAMINATION OF WATER, SEWAGE, AND INDUSTRIAL WASTE

PROPOSED CHANGES FOR THE TENTH EDITION

The Tenth Edition of *Standard Methods for the Examination of Water, Sewage, and Industrial Waste* has been prepared under the direction of a Joint Editorial Board which included representatives of the three participating organizations: American Public Health Association, American Water Works Association, and Federation of Sewage and Industrial Wastes Associations.

Many major and minor changes will distinguish the new edition from the Ninth Edition (titled *Standard Methods for the Examination of Water and Sewage*). The Tenth Edition will be divided into six parts instead of the four parts comprising the Ninth Edition. Methods included in the first four parts will cover the chemical examination of water, sewage, industrial waste and sludge. The fifth and sixth parts will cover bacteriological and biological methods respectively.

The Tenth Edition will be considerably changed in style and format. The two-column page will be retained, but each method will be set up with a two-column heading, bold face and italic subheads will be used to improve readability, and a standard format will be followed in the presentation of methods. All methods included will be either "standard" or "tentative"—none will appear in the appendix.

This edition will necessarily contain a greater number of pages, because of the new methods, augmented procedures, and charts included.

Following is a digest of major changes proposed for the Tenth Edition. Part I has been prepared by a committee of the AWWA; Parts II, III, and IV by a committee of the FS & IWA; and Parts V and VI by a committee of the APHA. The Joint Editorial Board will welcome prompt comment regarding proposed changes.

Joint Editorial Board
MACHARVEY MCCRADY, APHA
WILLIAM D. HATFIELD, FS & IWA
HARRY A. FABER, AWWA, *Chairman*

SUMMARY OF CHANGES

TENTH EDITION OF STANDARD METHODS FOR THE EXAMINATION OF WATER, SEWAGE, AND INDUSTRIAL WASTE

Part I—Physical and Chemical Examination of Water

The most important change made in revising this section is the approach. Many more details are included in the greatly expanded introductory section and in the individual determinations. This enables the analyst to have a better understanding of the principles involved and to recognize and overcome unusual conditions. Those who wish more background information will find a thorough bibliography for each subject.

Next in importance, and related to the change in approach, is the new format. Each method will discuss the application and scope, principles involved, reasons for choice between alternate methods (where applicable), interferences and their circumvention, hints on sampling and storing, stability of reagents, precision and accuracy, in addition to the customary listing of equipment, reagents, and procedure. All

chemical procedures will be printed in alphabetic order for ease in location. Wherever possible, photometric methods given also permit the use of visual comparison for those small laboratories which lack photoelectric instruments.

Major changes have been made in the following determinations:

Alkalinity—The related determinations of acidity, alkalinity, carbon dioxide, carbonate, bicarbonate, hydroxide, and pH have been revised by a single subcommittee and unified. The new Dye nomographs for calculation of forms of alkalinity employ the most recent information about ionization of carbonic acid and effects of ionic strength and temperature. The Cooper mixed indicator is offered as an alternative to methyl orange, and it is recognized that the exact pH at the equivalence point varies with the amount of alkalinity. The use of comparison buffer solutions is encouraged and the use of titrimeters, pH meters, and automatic titrators is permitted.

Fluoride—The new spectrophotometric method of Megregian-Maier is presented as well as visual comparison methods. Interferences have been quantitatively investigated and results tabulated. The removal of chlorine residuals is described. Methods both with and without distillation are presented.

Hardness—The new Schwarzenbach (complexometric, EDTA) methods are presented in detail together with a list of interferences and their effects and circumvention. The definitions of various forms of hardness are changed. The old soap, palmitate, and soda-reagent methods are deleted.

Iron—The century-old thiocyanate method has been deleted, the phenanthroline method revised, and a new tripyridyl method has been added. The tripyridyl method is expected to be valuable in case the sample contains more interfering ions than the other methods tolerate. The entire section has been rewritten and attention directed to the pitfalls of sampling and storage of samples. The gravimetric method is deleted.

Potassium—The flame photometric method is recognized, the colorimetric method of the Ninth Edition is retained, and a volumetric method is added. The perchlorate method of the Ninth Edition is deleted.

Methods which have been completely rewritten include free chlorine, chlorine demand, chromium, lead, maganese, the "nitrogen" tests, oil and grease, phenol, phosphates, residue, selenium, silica, sodium, specific conductance, sulfate, sulfide, taste and odor, and turbidity.

New procedures to be included in the Tenth Edition are the Gutzeit mercuric bromide method for arsenic, a colorimetric method using carmine for boron, the Schwarzenbach titration for calcium, the "Cuprethol" method for copper, a method for iodide based on the catalytic oxidation of arsenite by cerate, the brilliant yellow method for magnesium, the aminoantipyrine method for phenol, calculations for saturation index and stability index and per cent sodium, a turbidimetric method for sulfate, and a dithizone method for zinc.

Methods deleted include the gravimetric methods for aluminum, the evolution method for carbon dioxide, the hydrogen sulfide precipitation method for lead, the titan yellow method for magnesium, the benzidine method for sulfate, and the nephelometric method for zinc.

In addition to the changes in specific analytical methods, the Introduction to *Standard Methods* has been drastically revised. The discussions of sampling and obtaining representative samples, storage of samples, and choice of containers have been expanded and include up-to-date innovations. Some typical changes which may occur during storage are listed. The section "F" which appeared as a single paragraph on p. 5 of the Ninth Edition has grown to a two-page discussion of principles, optimum conditions, comparison of visual and photoelectric methods, and photometric compensation. The section "G" which appeared as a single paragraph on p. 5 of the Ninth Edition is now represented by a three-page discussion (with extensive bibliographies) of spectrography, polarography, electrotitrators, and other newer analytical apparatus, including that for measurement of radioactivity.

A four-page discussion on inter-

ferences has been inserted, which lists the more common examples, possible methods for circumventing them, and a procedure (recovery experiment) for detecting the existence of interference. The lengthy discussion in the Ninth Edition on hypothetical combinations and the classification of dissolved impurities is deleted. The discussion on alkalinity relationships has been moved from the Introduction to the section on Alkalinity.

Milligrams per liter (mg/l) and milliequivalents per liter (me/l) are recommended in preference to parts per million (ppm) and equivalents per million (epm) respectively, although the older terminology is still recognized. All factors have been recalculated to conform to the International Atomic Weights of 1952. A one-page section is added on checking the accuracy of a water analysis by the anion-cation balance, the Rossum diluted conductance method, and the use of ion-exchange resins.

RAY L. DERBY, *Chairman*
American Water Works Association Committee E-59, Standard Methods for the Examination of Water

Part II—Physical and Chemical Examination of Sewages, Effluents and Polluted Waters
Part III—Physical and Chemical Examination of Industrial Wastes and Effluents
Part IV—Physical and Chemical Examination of Sludges and Bottom Sediment

Although numerous minor changes have been made in Parts II and IV, which were parts II and III in the Ninth Edition, the major change has been the addition of the methods in Part III on the examination of Industrial Wastes which are almost entirely new.

The new methods which are proposed in Part III are:

1. A "standard" spectrophotometric method for the determination of color in industrial wastes with a "simplified" photoelectric-photometer method using three filters.
2. Dichromate Oxygen Consumed (COD) replaces the old Permanganate Oxygen Consumed which has been dropped from Part II except by reference to the dichromate method in Part III.
3. Under Dissolved Oxygen, the Winkler procedures and modifications in Part II are recommended as standard. However, it is realized that in heavy concentrations of many wastes these modifications often fail entirely and a polarographic method is proposed as "provisional or tentative" for use where conditions would recommend it.
4. Under Biochemical Oxygen Demand, the dilution method is standard and is presented in Part II. However, for studying the BOD and the aerobic "treatability" of industrial wastes at various lower dilutions, the manometric methods of Sierp and Warburg are presented.
5. Residual Chlorine received an entirely new presentation, retaining the present methods of amperometric, starch-iodine and orthotolidine with minor modifications to make them applicable to sewage in Part II and Industrial Wastes in Part III.
6. A new concept "Chlorine Requirement" is introduced to replace the old "Chlorine Demand." This really changes the final endpoint from 0.1 ppm residual chlorine to "that amount of chlorine required to meet a certain specification, such as 90 per cent coli destruction, 100 per cent CN destruction or 70 per cent color removal, etc."
7. Methods for the colorimetric determination of metal ions in industrial wastes from metal plating and metal treating plants. These methods will be "provisional" and will include Cu, Cd, Cr, Pb, Ni, Zn, Fe, Mn and total cyanide in the presence of large quantities of each other.
8. Two methods for the determination of phenols are given in Part II for sewage and industrial wastes, one of which is greatly simplified for higher concentrations of industrial wastes.

The new features of Part II are:

1. The addition of a section which gives a fundamental discussion on precision and accuracy and describes the statement on precision and accuracy which is given with most of the methods in Part III. The precision is stated as the standard deviation from the average that may be expected in a well operated laboratory under routine conditions with standard equipment. The data given represent the work of at least 3 laboratories running 10 tests on a sewage or effluent sample on 10 different days. Accuracy, where possible to determine, is expressed as the percentage recovery that may be expected from the theoretical or true value of the amount present. Unfortunately it is not possible to add known values of many of the test materials (for example BOD) from which to determine percentage recoveries.
2. The sections of dissolved oxygen and BOD have been completely rewritten, but not substantially changed. A standard for the BOD technic has been added.
3. The acidity and alkinity sections remain substantially the same except that an electrometric titration method has been added.
4. Chlorine residual and Chlorine Requirement have been discussed above.
5. Phenols have been added as discussed under Part III.
6. A new and improved method is given for the determination of grease.

Part IV contains two new methods:

1. Grease in Sludges.
2. Volatile acids in Sludges.

W. D. HATFIELD, *Chairman*
Federation of Sewage and
Industrial Wastes Associations
Committee on Standard Methods
for Sewage and Industrial
Wastes Analysis

Part V—Bacteriological Examination of Water and Sewage
Part VI—Biological Examination of Water

The bacteriologic methods and the biologic methods, previously designated as sections III and IV, are numbered V and VI in the Tenth Edition.

The changes in Part V, the bacteriologic methods, concern the requirements for glassware and equipment which now conform more closely to the requirements in *Standard Methods for the Examination of Dairy Products* than has been the case in the past. Thus, specifications for incubators, sterilizers, pipettes, etc., conform in the two volumes.

The major changes in technical procedure have been the adoption of tryptone glucose extract agar without skim milk as the required medium for the standard plate count, again, in order to conform as closely as possible to the requirements of *Standard Methods for the Examination of Dairy Products* for the standard plate count. This eliminates the necessity for laboratories examining both water and milk to have two different kinds of media.

The coliform test has been broadened to permit use of lauryl sulfate tryptone broth as alternative medium for the presumptive test. Gas formation in both lactose broth and lauryl sulfate must be confirmed by confirmatory inoculation into brilliant green bile broth or lauryl sulfate tryptone. The use of other types of inhibitory media for confirmation of positive presumptive tests has been eliminated.

The use of the Most Probable Number Index (MPN) has been continued, and the number of tables increased by inclusion of one giving the Most Probable Number Indices when a series of three replicate portions of each of a series of three or more volumes of sample tested is employed. Reporting coliform densities by use of the Indicated Number has been eliminated since this procedure is no longer in general

use and would seem to be of inferior value to the MPN index, which is now established as the only official method for indicating coliform densities in samples of water under examination. This particular section is prefaced by a brief discussion of the significance of the Most Probable Number test and no attempt has been made to give limiting standards of water quality or any discussion on the interpretation of the results. As in the previous edition, the U. S. Public Health Service Standards for Drinking Water have been included in full for their informational value in carrying out the standard procedures.

As in the past, the excerpts from the British standard methods have been included as a part of the standard procedure, but largely for informational purposes. Whereas in past editions only those excerpts from the British standards which discussed the rationale of the coliform test were included, the Tenth Edition will also include the directions for carrying out the technical procedures as they have been made official in the British methods. These have been listed as tentative methods for information only and are not established as alternative for the accepted standard procedure using lactose broth, as established in the APHA *Standard Methods* for many years.

The addition to Part V is a new section providing tentative methods for the detection and identification of the higher bacterial forms which are the basis of slime deposits in many water works structures. They have been designated as "nuisance bacteria" and the various procedures have been marked as tentative only. It is hoped that further studies of procedures for the detection of these types of bacteria in water can be made and that future editions will therefore be able to carry standard technics rather than tentative.

The material relative to the bacteriologic examinations previously carried in the Appendix has now been incorporated in the main part of the book.

Part VI, the biologic or microscopic methods, have been completely rewritten and revised. This section has been greatly extended to include a discussion of methods of sampling as well as procedures for identification of organisms and it has been improved by the addition of line drawings and photographs of microorganisms as an aid to the identification of species noted during microscopic examination. Both the areal standard unit and the volume standard unit have been incorporated as standards for expressing the results of biologic or microscopic examinations.

F. W. GILCREAS, *Chairman*
American Public Health Association
Standard Methods Committee for
the Examination of Water and
Sewage

ARMED SERVICE STATUS OF THE USPHS IS PROPOSED

The Executive Board of the American Public Health Association at its February meeting adopted a resolution proposing that the U. S. Public Health Service be again designated as a part of the Armed Services for reasons which seemed to the board very persuasive. The resolution follows:

It was voted to adopt the following resolution as a result of APHA representation at a meeting of the Medical Advisory Committee of the Armed Services on February 12, 1953, and with benefit of the board's discussion of a report thereon:

WHEREAS, the Congress and the President of the United States deemed it necessary during World War II that the Commissioned Corps of the U. S. Public Health Service be a military service in order to carry out its responsibilities most effectively, and

WHEREAS, the U. S. Public Health Service is actively participating in domestic and international activities relating to the current defense and security effort, and

WHEREAS, the Commissioned Corps of the Public Health Service on July 4, 1952, reverted from military status by virtue of the expiration of the power of the President to continue such status, and

WHEREAS, the Commissioned Corps of the Public Health Service should have military status by virtue of its responsibility to the Coast Guard, its need to recruit and involuntarily assign officers to any position, both foreign and domestic, on the same basis as the Armed Services, and

WHEREAS, service with the Public Health Service is similar to service in the armed forces and in the performance of such service there is a need for the privileges, benefits, immunities, authority, and discipline of a military service, and

WHEREAS, active service with the Public Health Service is creditable in fulfilling obligated service to the United States under the Selective Training and Service Act on the same basis as service with the armed forces,

THEREFORE, BE IT RESOLVED, by the American Public Health Association that the Commissioned Corps of the Public Health Service be returned to its previous military status, and

BE IT FURTHER RESOLVED, that the American Public Health Association recommends this action through proper executive and legislative channels of the federal government.

Oveta Culp Hobby, Administrator, Federal Security Agency, Washington, D. C., has acknowledged the receipt of this resolution and has said that the Surgeon General has brought to her attention the loss of the several benefits by the Commissioned Corps of the Public Health Service on official termination of World War II. The problem is under study. She has indicated that the interest of the American Public Health Association in the personnel of the Public Health Service is appreciated.

ADVANCE REGISTRATION

FOR 81ST ANNUAL MEETING

AMERICAN PUBLIC HEALTH ASSOCIATION

NEW YORK, N. Y., NOVEMBER 9–13, 1953

I wish to register in advance for the New York Annual Meeting and enclose a remittance of $4.00 to cover the registration fee. I understand that I may call for my badge and program at the Registration Desk in the Hotel Statler at any time after 9 A.M., Sunday, November 8.

Name .....

Business Address .....

City and State .....

I am a: Member ☐ Fellow ☐ Nonmember ☐

I wish to register my spouse. (Husbands and wives not in public health work are registered without charge.)

Name ..... Relationship to Delegate.....

Street Address ..... City ..... State .....

MAIL TO: AMERICAN PUBLIC HEALTH ASSOCIATION, 1790 BROADWAY, NEW YORK 19, N. Y.

HOTEL RATES

81ST ANNUAL MEETING

NEW YORK, N. Y., NOVEMBER 9–13, 1953

The form below is for your convenience in making hotel reservations. Please mail directly to the hotel of your choice. Those listed are West Side hotels holding rooms for Association delegates. The Statler and New Yorker are headquarters.

Hotel	*Address*	*Single*	*Double*	*Twin-Bedded*
Governor Clinton	7th Avenue & 31 Street	$5.50– 7.00	$7.50–10.00	$9.50–12.00
Henry Hudson	353 West 57 Street	4.00– 6.00	7.00–11.00	8.00–12.00
McAlpin	Broadway & 34 Street	5.00– 9.00	8.00–13.00	9.00–13.00
New Yorker	8th Avenue & 34 Street	5.00– 9.00	8.50–15.00	9.50–16.00
Statler	7th Avenue & 32 Street	5.50–10.00	8.50–12.00	9.50–17.00
Taft	7th Avenue & 50 Street	5.00– 7.75	9.75–10.75	10.50–11.50

Rates subject to 5% New York City Occupancy Tax

HOTEL RESERVATION FORM

AMERICAN PUBLIC HEALTH ASSOCIATION

81ST ANNUAL MEETING AND MEETINGS OF RELATED ORGANIZATIONS

NOVEMBER 9–13, 1953

PLEASE RESERVE:

Single Room with Bath at $..... per day

Double Room with Bath at $..... per day

Twin-bedded Room with Bath at $..... per day

Arrival: November ..... Hour ..... **Departing:** November ..... Hour .....

NAMES OF ALL OCCUPANTS: *ADDRESSES:*

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....

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MAIL CONFIRMATION TO: Signed: .....

Address: .....
City Zone State

MAIL THE FORM TO THE HOTEL OF YOUR CHOICE

EMPLOYMENT SERVICE

The following pages present information for those seeking public health personnel and for those seeking positions in public health.

This is a service of the Association conducted without expense to the employer or employee.

POSITIONS AVAILABLE

Regional Medical Director—$11,000. To supervise local health departments, covering 40 counties in Kentucky. Previous experience as a local health officer required. Bruce Underwood, M.D., Commissioner of Health, Kentucky State Dept. of Health, 620 S. Third St., Louisville 2, Ky.

Public Health Physician — as health officer for an established County Health Department of 37,000 in northwestern Illinois. $7,200–9,000 plus travel allowance. Qualified physician may start above the minimum. President, Lee County Board of Health, 123 E. First St., Dixon, Ill.

Medical Superintendent — Tuberculosis Hospital—Position open at Deer's Head State Hospital in Salisbury, Md. Must be graduate of accredited American medical school with specialization in study of tuberculosis and other pulmonary diseases; must have five years recent administrative experience in the institutional care and treatment of tuberculous persons. Must possess a valid license to practice medicine under the Maryland State Law. $9,000–11,250. James McCallum, M.D., Maryland State Health Dept., 2411 N. Charles St., Baltimore 18, Md.

Staff Physician—Tuberculosis Hospital —$6,744–8,088. Five years of experience in the practice of medicine, two of which shall have been in the treatment of tuberculosis in an administrative capacity, and graduation from a school of medicine of recognized standing. Harold Hudgins, Personnel Officer, Bureau of Personnel, Norfolk, Va.

Public Health Physician — to conduct school examinations, immunization and venereal disease diagnostic and treatment clinics. Prefer physician with training and experience in public health or pediatrics. Must have capacity for good public relations. $9,074–11,154 plus travel.

Public Health Engineer—to administer environmental health program for a city of 176,000 population. Program includes food, milk, meat, housing, plumbing, and institutional inspections. M.P.H. degree and administrative experience desired. Must have capacity for good public relations. Probable salary $6,214–7,540 plus travel. W. B. Prothro, M.D., Director, Grand Rapids Health Dept., Grand Rapids, Mich.

Physicians — with or without public health training, and **Pediatricians** for maternal and child health program. $6,908–9,887. Civil Service. E. R. Krumbiegel, M.D., Milwaukee Health Dept., City Hall, Milwaukee, Wis.

Public Health Physician — $10,138–11,925. Director of Bureau of Maternal and Child Health responsible for the planning and technical direction of its program. Minimum Qualifications: Graduation from an approved medical school, eligibility for a medical license in New York State **and** two years of hospital experience in pediatrics or obstetrics plus two years' experience in the maternal and child health program of a public health agency; **and** a master's degree in public health or two years of public health experience. Open on a nation-wide basis. Applications received until June 5. Examination on June 11. Mr. Richard H. Mattox, New York State Dept. Health, Office of Personnel Administration, State Office Bldg., Albany, N. Y., or the Dept. of Civil Service, 39 Columbia St., Albany, N. Y.

Medical Director—Kalaupapa Settlement, Molokai. $8,580–10,000 with perquisites. Minimum qualifications: M.D. from approved medical school; completion of acceptable internship; residency of one year in dermatology or allied specialty; practicing physician for three years in Hansen's disease, dermatology, or other related specialty, of which one must have been in an administrative capacity in a hospital; eligibility for a license to practice medicine in Hawaii. Write airmail: President, Board of Health, P. O. Box 3378, Honolulu, Hawaii.

Medical Social Worker—$3,484–4,108. **Medical Social Work Adviser**—$3,692–4,316. Female citizen residents of the United States possessing minimum qualifications. Personnel Director, Municipal Building, Hartford, Conn. Closing date: June 1, 1953.

Health Director—Flint, Mich. Population 170,000. To direct the municipal public health program. Required: license or eligibility for license to practice medicine in Michigan, at least five years as a practicing physician, preferably some experience in public health administration. Salary open.

Veterinarian—Flint, Mich. To plan and direct field inspectional services of meat and milk sections of City Health Department. Graduation from an accredited college of veterinary medicine and preferably one year's experience in the inspection of livestock. Salary $4,982–5,486. Write: Civil Service Commission, City Hall, Flint, Mich.

Senior Bacteriologist—for state laboratory position. Minimum requirements: Bachelor's degree in bacteriology plus three years progressively responsible experience as public health bacteriologist. Salary $322–394. A. T. Johnson, Personnel Director, Oregon State Board of Health, P. O. Box 231, Portland, Ore.

Bacteriologist III—State Public Health Laboratory. Starting salary $4,380 including $780 cost of living bonus. Desirable training: Master's degree or equivalent and three years practical experience. **Bacteriologist II**—Starting salary $3,780 including $780 cost of living bonus. College graduation with major courses in bacteriology or allied subjects; two years practical experience preferred. Henry A. Kjentvet, Personnel Officer, Wisconsin State Board of Health, Madison 2, Wis.

Biostatistician—for Health Services Division of the UAW-CIO, to collect, evaluate, and interpret statistics related to health and welfare program. Salary open, depending on training and experience offered.

Health Educator—to develop and promote health education for the UAW-CIO health and welfare program. Salary open, depending on training and experience offered. J. A. Katzive, M.D., Director, Health Services Division, 7930 E. Jefferson, Detroit 14, Mich.

Senior Health Education Consultant—Washington State Department of Health. Principal assistant to the head of the Health Education Section. M.P.H. in Health Education required; $5,112–6,096. Write: J. A. Kahl, M.D., State Director of Health, 1412 Smith Tower, Seattle, Wash.

Sanitarian—Trained, experienced sanitarian. College graduate preferred with degree in Sanitary Science. Capable of taking charge of Sanitation Department. Particularly experienced in milk and food sanitation. Excellent salary for man who can qualify. Director, McLean County Health Dept., 1009 N. Park St., Bloomington, Ill.

Summer Sanitarian—Must have practical knowledge of general environmental sanitation. Opportunity for student in sanitation and bacteriology. Salary $600–700, plus travel at 9 cents per mile. Car necessary. Fairfield Health Dept., 413 S. Benson Road, Fairfield, Conn.

Public Health Nurses—for generalized public health nursing program including school nursing. Rural and urban areas in a northern California Health Department. Expansion of services has created vacancies for three public health nurses and a clinic nurse. Public health nurse salary $298–370 depending upon experience and qualifications. Qualified registered nurses can be started on a junior public health nurse rating. Junior public health nurse salary $268–332. County car furnished or 8 cents per mile. Richard C. Murphy, M.D., Butte County Health Department, 2430 Bird St., Oroville, Calif.

Public Health Nurses—under supervision for generalized program in a City-County Health Department in southwestern Michigan, population 125,000, home of three colleges, $3,500–4,000, car required. Director of Health Dept., City Hall, Kalamazoo, Mich.

Public Health Nurse—for generalized program in City of Poughkeepsie, population 40,000; $3,060–3,755; travel allowance 8 cents per mile; may start above minimum salary depending upon qualifications. Write: Dept. of Health, 24 Washington St., Poughkeepsie, N. Y.

Certified Public Health Nurses—for a generalized program in a county of 37,000; 100 miles west of Chicago. Car essential. $235–300 per month with a travel allowance of $65 per month; three weeks vacation. President, Lee County Board of Health, 123 E. First St., Dixon, Ill.

Public Health Nurse—for VNA in beautiful California area; $275 per month with $40 per month car allowance. VNA experience plus PHN degree desired. Nurse Director, P. O. 3721, Carmel, Calif.

General Supervisor—for Milwaukee Visiting Nurse Association with experience and preparation in orthopedic nursing or industrial nursing. To function as branch office supervisor and give educational and service leadership and guidance to the special field. $4,100–5,000. Position available immediately.

Assistant Supervisor—Opportunity to

secure experience in supervision under guidance of qualified supervisor and educational director. $3,900–4,300. Position available immediately.

Qualified, experienced **Public Health Nurses**—for staff positions in Visiting Nurse Association of Milwaukee; $3,800–4,300. Miss Ruth E. TeLinde, Executive Director, Visiting Nurse Association, 1234 N. Prospect Avenue, Milwaukee 2, Wis.

POSITIONS WANTED

Parasitologist-Bacteriologist—37 years, B.S. in Medical Biology, M.S. in Bacteriology, Ph.D. in Parasitology; 53 scientific publications; experience: 2 years public health laboratory; 7 years hospital laboratory; 5 years research institute; 2 years full-time and 2 years part-time teacher in medical schools; over one year tropical experience; available for position in the United States or abroad by September 1, 1953. Write: **Box L–27**, Employment Service, APHA.

Assistant Hospital Administrator—Over 10 years administrative experience, last 7 in official and voluntary health fields; hospital survey experience; heavy on personnel management; graduate training in administration. Married, age 40, 3 dependents. Write: **Box C–23**, Employment Service, APHA.

Administrator-Statistician — M.S.P.H. Returning to U. S. in July from active duty as senior grade officer with USPHS. Primary interests: administration of research or medical care program for government or private organization. Present pay and allowances over $9,000. Write: **Box C–24**, Employment Service, APHA.

Sanitary Engineer—Desires responsible position, public or private, preferably in the East. Age 30, married, veteran, more than five years experience including Sanitary Design; operation, maintenance, construction sewer system and treatment plant; water pollution control surveys, river basins; nonsanitary construction. Write: **Box E-20**, Employment Service, APHA.

All communications on the following advertisements should be sent to Burneice Larson, Medical Bureau, Palmolive Building, Chicago 11, Ill.

OPPORTUNITIES WANTED

WANTED—Opportunities for group of well qualified Public Health Physicians and Dentists, Public Health Nurses, Health Educators, Statisticians, Sanitary Engineers and Laboratory Workers. Candidates available for administrative, academic and staff appointments. All negotiations strictly confidential. Please outline your requirements and credentials of qualified candidates will follow. THE MEDICAL BUREAU (Burneice Larson, Director) Palmolive Building, Chicago.

OPPORTUNITIES AVAILABLE

WANTED—Public Health Physicians and Dentists, Health Educators, Public Health Nurses, Nutritionists, Public Health Laboratory Personnel, Sanitary and Industrial Engineers for administrative, academic and staff appointments. Opportunities in all parts of America including countries outside continental United States. All negotiations strictly confidential. Please send for our ANALYSIS FORM so that we may prepare an individual survey of opportunities in your particular field. THE MEDICAL BUREAU (Burneice Larson, Director) Palmolive Building, Chicago.

NEWS FROM THE FIELD

WHO NEWS

Rehabilitating Korean Medical Facilities

WHO, the United Nations Korean Reconstruction Agency, and the American-Korean Foundation have each contributed to some aspect of planning the rehabilitation of Korean medical facilities.

A three-man WHO-UNKRA Health Planning Mission, in a report of mid-February, has suggested a five-year Korean health program to bring the country's medical and public health services up to a proper standard. The Mission, although finding that Korea "contains most of the material for medical services of a reasonable standard," nevertheless recommends to the agent general of UNKRA assistance to the extent of from 10 to 12 million dollars a year for five years in a long-range program of medical rehabilitation.

Among the Mission's urgent recommendations was the reopening of medical colleges in Kwanju, Seoul, and Taegu. The first project in this direction was undertaken in February when ground was broken for rebuilding the Taegu Medical College for which UNKRA has allocated $825,000. When completed, there will be a 300-bed hospital and a medical school equipped with excellent teaching materials and personnel for about 350 students.

The Mission found an insufficient number of nurses, too few dentists and pharmacists, and subordinate staff such as technicians, sanitary inspectors, and even maintenance personnel to be "virtually nonexistent." Hence it proposed that 168 fellowships for periods of six months or a year be created for medical and related personnel.

Also contributing to the planning for the medical rehabilitation of Korea is the American-Korean Foundation, a newly organized philanthropic group in the United States. Under its auspices, Howard A. Rusk, M.D., director of the Institute of Physical Medicine and Rehabilitation of the New York University-Bellevue Medical Center, headed a mission to Korea in March, also to plan for rehabilitation of Korean medical practice. He suggested that the United States Army 800-bed hospital at Taejon for patients from the Korean Service Corps be used for residency training of Korean physicians. He suggested that 20 Korean army doctors be selected immediately for a year's residency training. The plan has been enthusiastically received together with an assurance that the training plan will not be destroyed by the recall of the students to the front line. The plan must still have formal approval by the United States Army Medical Department.

The staff at the Taejon hospital includes 28 American doctors, 48 nurses, and 270 enlisted doctors. An average of 18 operations are performed daily. Dr. Rusk believes the hospital's specialized medical training facilities are comparable to those available under United States scholarships.

WHO Annual Report

The annual report of the director-general to the World Health Assembly and to the United Nations is now available. Entitled, *The Work of WHO, 1952*, it is No. 45 of the official records of WHO and is available from the Columbia University Press, 2960 Broadway, New York 27, $1.25.

The report is divided into three parts, Direction and Coordination of International Health Work, Assistance to Governments in the Regions, and Col-

laboration with Other Organizations.

In his swan song the director-general, Dr. Brock Chisholm, says in a foreword:

"The Executive Board, to be able to fulfill its highly important role as technical adviser to and executive organ of the Assembly, is composed of members responsible to the Assembly alone, not to governments or any other bodies. . . . Nothing short of complete world-mindedness is acceptable in any member of the Executive Board.

". . . Essential elements in the maintenance of the reliability and efficiency of the Secretariat are world-mindedness on the part of delegates to the Assembly, even greater world-mindedness and absolute independence of judgment on the part of members of the Board, and the complete freedom of the Secretariat from pressure or even suggestion from representatives of governments. Given these conditions, which are not under its own control, the Secretariat can serve the Organization faithfully and effectively."

Yaws Is Receding

In a summary of the fight against yaws in four countries, R. R. Willcox, consultant to the Venereal Disease Department of St. Mary's Hospital, London, and former WHO consultant, reports that nearly eight million persons had been examined among the 118,000,000 population of Haiti, Indonesia, the Philippines, and Thailand. Of these more than three million were found affected and were treated in large-scale campaigns undertaken by the governments with the aid of WHO and UNICEF.

It was found that yaws could be cured often by one, at most by two or three, intramuscular injections of repository penicillin. The majority of patients were found to prefer to undergo injections, sometimes painful, than to swallow pills, in the belief that "something that doesn't hurt cannot do any good."

Dr. Willcox estimates the cost of treatment given, including cost of staff and material, to be less than three dollars per person. "Thus," says he, "only three dollars may be the price of health and vigor in countries where the community needs an ever increasing number of workers to improve its lot."

Unitarian Mission to Indonesia

A six-week mission to three medical schools of Indonesia is being carried out in April and May jointly by WHO and the Unitarian Service Committee. WHO is responsible for professional and technical aspects, USC for the administrative aspects of the program.

The team is made up of 12 scientists from 8 countries. The chairman is Dr. Arvid Wallgren, professor of pediatrics at the Royal Caroline Institute, University of Stockholm. The three Americans are Joseph S. Barr, M.D., clinical professor of orthopedic surgery, Harvard University; Ernest Boyce, professor of public health engineering, University of Michigan School of Public Health; and Fredrick J. Stare, M.D., professor of nutrition, Harvard School of Public Health.

FINDING OUT WHY MARRIAGES GO WRONG

In an attempt to find out what types of personality combinations in man and wife lead to family difficulty, the Community Research Associates of New York are undertaking a new four-year study. In the belief that preventing family disintegration is as important as preventing disease, the Louis W. and Maud Hill Foundation has made available to the Associates $200,000 for carrying on the study. Some 1,500 families in different parts of the country will be studied in order to determine whether the same marital combinations cause trouble in each of the various socioeconomic groups and what types of services are best designed to help alleviate the troubles. The findings, it is hoped, will be especially useful in the early treatment of troubled families when casework methods can be most effective and chances of family recovery fairly good.

This further research into family diffi-

culties was indicated by an earlier study in St. Paul. Here it was found that 6 per cent of the families in the community had so many troubles that half of all health and welfare services of community agencies were carried out in their behalf. The results of this earlier study were published in *Community Planning for Human Services* by Bradley Buell and Associates (*A.J.P.H.* 42, 4:451, 1952). The new study is expected to develop a book on family relationships.

ON THE ALCOHOLISM FRONT

Two recent events signify the growing awareness of alcoholism as a public health problem. The first is the Public Affairs Pamphlet, *Alcoholism—A Sickness That Can Be Beaten*. By Alton Blakeslee, science writer for the Associated Press, this pamphlet was planned as successor to the 1946 pamphlet, *Alcoholism Is a Sickness*, in view of the changing picture in research on and treatment of alcoholism. The main emphasis is that the disease can be beaten not by a magic cure, not simply and easily, not by pills, not by stern vows but by knowing all about it—what causes it and the hard road to overcome it. Public Affairs Pamphlet No. 118, 22 East 38th St., New York 16; 25¢. Reduction on quantity orders.

The other event is a recent conference on "Problem Drinking and Industry" sponsored by a number of New York organizations including the Commerce and Industry Association of the city, two local labor unions, and a number of medical bodies. Here a report was given of the first year's experience of the Consultation Clinic for Alcoholism being conducted by the Institute of Industrial Medicine of the New York University-Bellevue Medical Center in cooperation with the Consolidated Edison Company and other industrial organizations that refer problem drinkers to the clinic.

The report of Arnold Z. Pfeffer, M.D., assistant clinical professor of psychiatry at the New York University College of Medicine, who is in charge of the clinic, has been released to the press and can presumably be had from the college. 477 First Ave., New York 16.

AMHERST HEALTH CONFERENCE

The 7th Annual Amherst Health Conference will be held at the University of Massachusetts, June 17–19, 1953. The meetings will open with a luncheon address by Paul B. Magnuson, M.D., chairman of the President's Commission on the Health Needs of the Nation. At the closing luncheon C.-E. A. Winslow, Dr.P.H., editor of the *American Journal of Public Health*, will summarize the conference's deliberations.

Among the conference speakers are Gaylord Anderson, M.D., past-president of the American Public Health Association, Drs. Haven Emerson, Franz Goldmann, and Howard F. Root. The New England Division of the American Nurses' Association will hold its annual meeting jointly with the conference.

The Amherst Health Conference, Inc., is administered by a continuing Board of (nine) Directors, appointed by the heads of the Massachusetts Public Health Association, the University of Massachusetts, and the Massachusetts Department of Public Health. The directors cordially invite health workers everywhere to attend the conference. Preliminary programs and application blanks may be obtained from the clerk of the conference: Marion T. Drake, Room 74, 8 Beacon Street, Boston.

CASE HISTORIES OF SOME IN TROUBLE

The Communications Materials Center of Columbia University has prepared *Why Did He Do It?*, a new documentary radio series which it hopes will be "a valuable aid in mental health education." The series of six actual case histories of people who have been in

trouble: a burglar, an arsonist, a juvenile delinquent, an embezzler, a prostitute, and a drug addict, has been widely recommended by both the National Association for Mental Health and Community Chests and Councils, the latter calling it an "emotional experience which every radio listener should be given the opportunity of hearing."

An audition disc containing the first two programs is available. For booking this and for detailed information on prices write Margery Johnston, Business Manager, Communications Materials Center, 412 W. 117th St., New York 27.

NEARLY 100,000 DENTISTS

The American Dental Association has published the 1953 edition of the *American Dental Directory*. In the *Directory* are listed 91,638 dental practitioners; 84,215 civilian dentists and 7,423 serving in the armed forces and the Veterans Administration.

The latest count of members of the dental profession shows nearly 5,000 more dentists than were listed in the 1950 *Directory*, while the proportion of dentists to population has increased slightly; from one dentist for each 1,733 residents in the United States in 1950 to one in 1,691 in 1953. The number of dentists now on duty with the armed services and the VA has increased nearly threefold since the last *Directory* was published in the fall of 1950. At that time, 2,575 dentists were reported as serving in the military forces and the VA.

American Dental Association, 222 E. Superior St., Chicago 11, Ill.

OCCUPATIONAL MEDICINE OFFICERS

The American Academy of Occupational Medicine elected the following officers at its recent annual meeting in Rochester, N. Y., in February:

President: Allan J. Fleming, M.D., E. I. duPont de Nemours and Company, Wilmington, Del.

Vice President: Arthur F. Mangelsdorff, M.D., Calco Chemical Division, American Cyanamid Corporation, Bound Brook, N. J.

Treasurer: Irving R. Tabershaw, M.D., consultant in industrial medicine, New York City

Secretary: Leonard J. Goldwater, M.D., Division of Occupational Medicine, Columbia University School of Public Health, New York City

Dr. Goldwater is a Fellow of the Medical Care Section and Dr. Tabershaw a member of the Industrial Hygiene Section, American Public Health Association.

WATER WORKS ASSOCIATION ELECTS

The American Water Works Association has elected the following officers for the year 1953–1954:

President: Morrison B. Cunningham, superintendent and engineer, Water Department, Oklahoma City, Okla.

Vice-President: Dale L. Maffitt, general manager, Water Works, Des Moines, Iowa

Treasurer: William W. Brush, editor, Water Works Engineering, New York City

Mr. Brush is a member of the Engineering Section, and Mr. Maffitt of the Statistics Section, American Public Health Association.

FLUORIDE ANALYSIS TECHNIC

The laboratory analysis of water for fluoride content will be the subject of a two-day short course to be held at the Environmental Health Center, Public Health Service, Cincinnati, Ohio, May 28–29. The course is offered for laboratory workers who are in a position to train chemists and others who may be responsible for fluoride determinations of water. Applications to Chief, Specialized Sanitation Training Section, Environmental Health Center, 1014 Broadway, Cincinnati 2.

NEARLY TWO CENTURIES OF HISTORY

The Veterinary College of Hanover, Germany, one of the oldest in Europe, is 175 years old in 1953. It is cele-

brating this jubilee from July 29–31, with a review of Veterinary Colleges and Veterinary Medicine throughout the world. Americans and others, particularly those attending the Fifteenth International Veterinary Congress in Stockholm on August 15, are invited to include the Hanover Jubilee celebration in their itineraries.

The American Public Health Association is being represented at the celebration by James H. Steele, D.V.M., chief, Veterinary Public Health Section, Communicable Disease Center, U. S. Public Health Service.

Further information from Professor Dr. R. Völker, Rektor der Tierärztlichen Hochschule, den Hans-Böckler-Allee 16, Hanover, Germany.

PUBLIC HEALTH NURSING SURVEY GUIDE

The National League for Nursing has prepared a set of *Self-Survey Guides for Public Health Nursing Services* designed as practical and stimulating aides in initiating community appraisals and collecting the data for such appraisals. Included are an introduction and bibliography and seven schedules which may be used separately or together. The titles are:

I The Community
II Public Health Nursing Program
III Health Department Nursing Service
IV Voluntary Agency
V The Combination Agency
VI Public Health Nursing Services for School Child
VII Part-time Industrial Nursing Service

Department of Public Health Nursing of the National League for Nursing, 2 Park Avenue, New York 16. $2.25 for the set. I, II, VII separately, 30¢; III-VI, 40¢. Reduction on quantity orders.

SANITARY ENGINEERING FELLOWSHIPS

The State College of Washington announces a number of half-time research assistantships in sanitary engineering for the academic year beginning September, 1953. Student assistants, while pursuing course work for the degree of master of science in sanitary engineering, will receive $1,400 the first year and $1,490 the second. Opportunities for full-time employment during the summer months are considered favorable. Professor Emmett B. Moore, Chairman, Department of Civil Engineering, State College of Washington, Pullman, Washington.

SCHERING AWARDS COMPETITION

Terms of competition among students of medical schools in the United States and Canada for the 1953 Schering Awards have been announced. A $500 prize will be awarded for the most distinctive paper on each of three general topics:

Antihistamine treatment of upper respiratory allergies and infections
Hormone therapy of the degenerative diseases
New concepts in the treatment of peptic ulcer

In addition a Dean's Award of $100 will be available to the writer in each school where several students compete, of the paper selected as the most meritorious by the dean of the medical school.

Entry forms specifying the title chosen by the student must be submitted by July 1, the actual manuscript, not to exceed 5,000 words, by October 1.

The Awards, which are in their eighth year, were established by the Schering Corporation to encourage original medical reporting and thus substantially contribute to the development and communication of knowledge throughout the medical profession.

Information and instructions for the 1953 competition from: Schering Corporation, 2 Broad St., Bloomfield, N. J.

HOSPITAL ADMISSION CHEST X-RAYS

Because of the general interest in the problem of routine chest x-rays of patients admitted to general hospitals,

the Wisconsin Anti-Tuberculosis Association is making available copies of its report of a "Study on Routine Admission X-Ray Programs." Of the 134 general hospitals, 22 that admit more than one-fourth of the patients who enter Wisconsin general hospitals annually conduct routine x-ray admission programs. In an average of 29 months of experience these hospitals x-rayed an average of 60 per cent of admissions.

Among the chief obstacles to initiating the program in other hospitals was found to be reluctance to increase fees to patients. Some hospitals also reported lack of interest in and demand for the program by the medical profession and the general public.

John P. Hein, consultant for local associations, is the author of *Routine Admission Chest X-Rays in Wisconsin General Hospitals*. Wisconsin Anti-Tuberculosis Association, 1018 N. Jefferson St., Milwaukee 2.

PSYCHOLOGICAL QUACKS FILL A VACUUM

Los Angeles County is reported to be an illustration of the fact that the public demands certain services—and will get them—from whatever sources the community affords, whether good or bad. The Southern California Society for Mental Hygiene, in a report on *Low Cost Psychiatric Clinic Care*, poses the theory that the shortage of legitimate psychiatric care is the reason why Los Angeles has long been the Mecca for psychological quacks and charlatans. The report finds that existing clinics are only 29 per cent of those needed, that full-time staff is only 28 per cent of the need—22 per cent for psychiatrists, 49 per cent for psychologists, and 26 per cent for social workers. Existing clinics are highly inaccessible to large areas of the 4,000 square miles of the county containing 4,000,000 persons. Only two clinics have evening sessions for working families. The report makes recommendations for an immediate and long-range program to provide a flexible network of clinics "that will prevent fleecing of the public by untrained and unscrupulous quacks." *Community Report No. 1*, Southern California Society for Mental Hygiene, Los Angeles 5.

INDUSTRIAL NOISE STUDY COMMITTEE

Pressure for standard criteria for determining noise levels that endanger the mental and physical well-being of individuals in industry and in the community has led to a research program by a subcommittee of the American Standards Association. The research program will "explore whether criteria for noise control can be established in the light of presently available bio- and psycho-acoustic data, and to publish such criteria for the use of those interested in industrial noise limits." Thus, the committee will study the reliability and significance of various sets of industrial and governmental and university laboratory data. It will attempt to establish recommended noise limits for specific locations and conditions.

Among the pressures leading to the creation of the subcommittee and its research program are current claims in the courts totaling two billion dollars for deafness due to industrial noise, the accident hazards in factories due to warnings or instructions misunderstood because of noisy machines, noise levels in cities and industrial areas that endanger mental and physical well-being, and increasing sales resistance to noisy equipment.

Chairman of the subcommittee is Walter A. Rosenblith, associate professor of communications biophysics, Massachusetts Institute of Technology. Technical counsel and main investigator is H. Wayne Rudmose, professor of physics, Southern Methodist University, where he developed its Acoustics Laboratory. The other members of the committee have cross-affiliations covering nearly 50 groups—industry, professional

and scientific societies, and government agencies.

SUMMER SESSIONS

Notice of the following 1953 summer sessions related to public health had been received by March 30. No attempt has been made to get a complete census of special summer sessions. Those that are suitable for *Journal* notice should be sent to the Editor preferably by February 28 and not later than March 31 annually.

Summer School of Alcohol Studies (11th annual) Yale University, Laboratory of Applied Physiology, June 28–July 23. A systematic investigation of various aspects of the functions and problems of alcohol as they affect the individual and society. The afternoons of the last two weeks are devoted to seminars — education, problems confronting clergymen, rehabilitation, medical therapy, and health organization; others if student needs indicate. Tuition $250 for ministers, physicians, social, welfare, and probation workers, teachers and certain other categories; others $425. Protestant clergymen and religious workers apply to Department of Pastoral Services, National Council of Churches, 297 Fourth Ave., New York 10. All others to Summer School of Alcohol Studies, 52 Hillhouse Avenue, Yale Station, New Haven, Conn.

Family Life Workshop, University of Minnesota through several graduate departments, July 6–24. A synthesis of advanced practice at the graduate level for those professionally engaged in family life education. Content is being organized around four study areas—teaching, marriage counseling, research and evaluation, and community education and planning. Four quarter credits. Mrs. Dorothy T. Dyer, Chairman, Family Life Program, 204 T. N. M., University of Minnesota, Minneapolis.

Community Nutrition Institute, Syracuse University, June 14–27. Sponsored by the College of Home Economics, Syracuse University, and the Nutrition Bureau, New York State Department of Health. The institute, presenting a public health approach to nutrition problems, is planned for nutritionists, physicians, dieticians, public health nurses, and health educators. Future trends in nutrition, the implications of the general adaptation syndrome to the field of nutrition, the effect of man's normal stresses upon his nutrition, and a study of the public health problems of diabetes and rehabilitation will be considered. Further information from Dr. Anne Bourquin, Chairman, Department of Food and Nutrition, Syracuse University, Syracuse, N. Y.

Workshop in Applied Nutrition, University of Kentucky, Department of Home Economics, in cooperation with the American National Red Cross, July 6–18. Theme, Good Nutrition Throughout Life. Lectures, workshop groups to study specific interests of enrollees, evaluation of nutrition materials, including audio-visual aids. If desired, two credits on graduate or undergraduate level, depending on amount of work invested.

	Residence	
	Kentucky	Out of State
Without Credit	$10	$10
Undergraduate Credit	11	21
Graduate Credit	15	28

Further information from Statie E. Erikson, Head, Department of Home Economics, University of Kentucky, Lexington.

Summer Field Training for Engineers and Sanitarians (third annual), Oklahoma Field Training Center, Norman, Okla., June 1–July 31. Jointly sponsored by the Oklahoma State Health Department, the U. S. Public Health Service, and the University of Okla-

homa. The purpose is to provide students with practical field training through a "learn-by-doing" technic, and to give them a broad acquaintance with public health practice. Courses consist of supervised field work and laboratory practice, together with group discussions on the field work.

The University of Oklahoma Department of Public Health offers, to qualified students, five to eight hours credit in public health practices (graduate or undergraduate). Regular tuition for students enrolling for credit; no fee for others.

Applications for admission to one of the following: Officer in Charge, Training Branch, C.D.C., U. S. Public Health Service, 50 Seventh St., N. W., Atlanta, Ga.; Chairman, Department of Public Health, University of Oklahoma, Norman; or Chief Engineer, Oklahoma State Health Department, Oklahoma City.

Courses in Health Education, University of Cincinnati, June 1–19. "Principles and Materials of Health Education in the Elementary School," "Current Problems in Health Education," "Safety Education in the Schools." Classes scheduled so a student may take all three. Two graduate or undergraduate credits for each course. Further information from University of Cincinnati, Cincinnati, Ohio.

Health Education Workshop, Miami University, Oxford, Ohio, July 6–25. Theme, "Human Relations—an Integrated Approach." Three hours graduate or undergraduate credit. Tuition $20. Walter Gregg, Health Coordinator, Miami University, Oxford.

Health Education Workshop, Ohio State University, June 23–July 11. Basic and newer trends in school and community health education, methods and materials for health teaching, and both group and individual projects. Four quarter hours of graduate or undergraduate credit. No tuition. Mrs. Florence Fogle, Room 8, University School, Ohio State University, Columbus 10.

Conference on Current Concepts of Venereal Disease Control, for nurses. University of Pennsylvania in cooperation with its Institute for the Study of Venereal Diseases and the U. S. Public Health Service, May 25–June 6. All aspects of venereal disease control including diagnosis, treatment, epidemiology, program planning, and administration will be covered. No tuition. Two credits. Applications to Theresa Lynch, Dean, School of Nursing, University of Pennsylvania, 3629 Locust St., Philadelphia 4.

Workshop for Industrial Nursing Consultants, Yale University, Department of Public Health, June 15–20. The promotional responsibilities of the industrial nurse consultant. Limited to 20 nurses with at least six months' experience as nursing consultants. Tuition $25. Apply Mary Louise Brown, Assistant Professor of Public Health, Section of Occupational Health, 310 Cedar St., New Haven 11, Conn.

Summer Institute in Survey Research Techniques (6th annual) University of Michigan, June 22–July 17, also July 20–August 14. Program is designed to illustrate the theory and application of survey research to such fields as public health, psychology and sociology, human relations, education, and statistics, among others. The first session is introductory, the second a workshop in the practical application of survey research methods in the individual fields. If graduate credit is desired, admission to the Graduate School is required. Survey Research Center, University of Michigan, Ann Arbor.

Massachusetts Institute of Technology

Management Responsibility for Occupational Health—June 22–June 26. The aim is to present the data needed by management to develop sound practices in promoting worker health. Physicians, psychiatrists, and industrial hygienists trained in this field will present measures needed to prevent ill effects of occupational stress and actual disease from potential industrial hazards.

Food Technology—June 29–July 17. Will include fundamental surveys of food supplies, equipment, and processing. In addition to lectures, demonstrations, conferences, and reports, opportunities will be offered for group visits to representative food companies in the Boston area.

Noise Reduction—August 24–September 4. Program will be devoted to consideration of the principles of and criteria for noise control in buildings, machines, and enclosures. Group discussion of noise and vibration reduction will be supplemented by laboratory demonstrations and field trips.

City and Regional Planning—August 24–September 4. Continuing the annual series for those concerned with administrative and technical aspects of city and regional planning, the course will have special interest for persons directly concerned with urban and regional development, for members of state and municipal planning staffs or commissions, and for real estate, investment, and industrial corporations.

Professor Ernest H. Huntress, Director of the Summer Session, Room 3–107, Massachusetts Institute of Technology, Cambridge 39.

Summer School in Health Education, Royal Holloway College, England. Arranged by the Central Council for Health Education, August 10–20. Professional workers meet together to learn what is happening in the world of health education, to learn about new experiments and developments, and study modern methods of teaching and publicity. A students' committee presents student views and needs. Tuition and residence £16 16s, Od., Medical Director, The Central Council for Health Education, Tavistock House, Tavistock Square, London W. C. 1.

PERSONALS

DONALD G. ANDERSON, M.D., former secretary of the Council on Medical Education and Hospitals, American Medical Association, has been made dean of the School of Medicine and Dentistry, University of Rochester, New York, succeeding GEORGE HOYT WHIPPLE, M.D., whose resignation will take effect on June 30.

GAYLORD W. ANDERSON, M.D., Dr.P.H.,* University of Minnesota, Minneapolis; WALDO TREUTING, M.D., M.P.H.,* Tulane University, New Orleans; and CLARENCE I. STERLING, JR.,* Chief Sanitary Engineer of the Massachusetts Department of Public Health, Boston, were recently elected to Honorary Membership in the Egyptian Public Health Association, Cairo.

FRANCIS A. ARNOLD, JR., D.D.S.,† who has been associate director of the National Institute of Dental Research, Bethesda, Md., since 1948, has been promoted to become director, succeeding H. TRENDLEY DEAN,* D.D.S., retired.

PHILIP A. BEARG, M.D., Dr.P.H.,* has been appointed pediatrician, Division of Maternal and Child Health, Kansas State Health Department, Topeka.

MARGARET E. BENSON, R.N., since 1951 special consultant to the Division of Nursing Resources, Bureau of Medical Services, U. S. Public Health Service, has been appointed chief of the Infectious and Tropical Diseases Nursing Section of the Clinical Center at the National Institutes of Health, Bethesda, Md.

WALTER L. BIERRING, M.D.,* state commissioner of health, Des Moines, Iowa, has announced that he will retire at the completion of his third term at the end of June, 1953.

* Fellow.
† Member.

VESTA BOWDEN, R.N.,* chief, Public Health Nursing Section, Colorado State Department of Hea'th, Denver, has been elected secretary of the State Directors of Public Health Nursing.

ALONZO F. BRAND, M.D.,† former regional medical director, San Francisco office of the Public Health Service, has been assigned as chief, Public Health Division, Special Technical and Economic Mission to Thailand, Mutual Security Agency.

LESTER BRESLOW, M.D.,* chief of the Bureau of Chronic Diseases, California State Department of Public Health, Berkeley, has returned after a year's leave of absence as director of studies, President's Commission on the Health Needs of the Nation.

L. M. CLARKSON,* former director of public health engineering, Georgia Department of Public Health, has retired after 30 years of service to become instructor, Department of Preventive Medicine and Public Health, School of Medicine, Vanderbilt University, Nashville, Tenn.

CLAUDE H. COLVIN, formerly milk sanitarian, Binghamton district office, has been appointed assistant chief, Milk and Restaurant Sanitation Section, Bureau of Environmental Sanitation, New York State Department of Health.

MARY C. CONNOR, R.N.,* formerly research associate, Division of Nursing Education, Teachers College, Columbia University, New York, N. Y., has been appointed professor of nursing and chairman, Department of Public Health Nursing, Boston University, Mass.

SAMUEL J. CRUMBINE, M.D.,* 90-year old pioneer public health official, who, as secretary of the Kansas State Board of Health in 1909, initiated the movement to outlaw the common drinking cup, was the guest of honor at a luncheon exhibit given by the Dixie Cup Company at the Hotel Savoy-Plaza in New York City on February 19.

THEODORE S. DRACHMAN, M.D., M.S.P.H.,* first deputy commissioner of health, Westchester County (New York), is the author of *Cry Plague* with a public health background, published by Ace Books.

ORVILLE M. FITZGERALD, M.D., acting assistant superintendent at Danville State Hospital since 1950, has been named to the newly created post of assistant commissioner of mental health, Pennsylvania State Welfare Department.

JOHN L. FORTSON, former director of information service, National Society for the Prevention of Blindness, New York, N. Y., is now executive director, Connecticut Mental Health Association. He has been succeeded by EDWARD R. FAY, JR., who has been associated with Will, Folsom & Smith, hospital capital fund consultants, New York, N. Y.

PROFESSOR W. M. FRAZER, O.B.E., M.D., D.P.H.,* has retired as medical officer of health, Liverpool, England, after more than 21 years of service. Dr. Frazer is an Honorary Fellow of the APHA and made many friends in a visit in 1942 to the United States.

FRANCIS GAMELIN, formerly chief of the Mental Health Section of the Minnesota Department of Health, is now a counselor in the Student Counseling Bureau, University of Minnesota, Minneapolis. He has been succeeded by WILLIAM FERGUSON.

ROBERT S. GOODHART, M.D.,* has been re-elected executive scientific director, National Vitamin Foundation, New York City.

RENA HAIG, R.N.,* chief, Bureau of Public Health Nursing, California State Department of Health, San Francisco, has been elected chairman of the State Directors of Public Health Nursing.

RUTH HARRIS,† an associate in the Program Development Division, National Tuberculosis Association, for the past three and a half years, has joined the staff of the South Carolina Tuberculosis Association, Columbia.

WASILY HOEFFDING has been appointed associate professor of mathematical statistics and not biostatistics, University of North Carolina, Chapel Hill, as erroneously stated in our March *Journal*.

NORMAN JOLLIFFE, M.D.,* director, Bureau of Nutrition, New York City Department of Health, has been re-elected president of the National Vitamin Foundation.

DR. YOSIO KAWAKITA, on loan to WHO from Chiba University, Japan, is in Egypt to work with the WHO's research project in the control of trachoma at the Memorial Ophthalmic Laboratory at Giza, near Cairo, where a study course on trachoma is being given, attended by a number of WHO fellowship holders from Egypt, the Eastern Mediterranean region, and Europe.

EVERETT A. KING, M.D., most recently medical officer, 14th District, U. S. Coast Guard, Honolulu, while on duty with the U. S. Public Health Service, is now director, Harlan County Health Department, Kentucky.

BERKLEY D. LEEDS, executive assistant, Essex County (N. J.) Tuberculosis League since April 1948, has become an associate, Pro-

gram Development Division, National Tuberculosis Association, New York City.

DOROTHEA LINDSEY, former newspaperwoman and short story writer, is now an associate, Public Relations Division, National Tuberculosis Association, New York City.

T. W. MAHONEY, M.D., most recently commissioner of the Monroe County (Mich.) Health Department and former health commissioner of Lucas County (Ohio), has been appointed health officer of the Northwest District, Ohio State Health Department, headquarters Cuyahoga Falls.

BERTRAM E. MARKS, M.D., M.P.H.,† has resigned as director, City-County Health Department, Pueblo, Colo., to accept a position in the Division of Preventive Medicine, San Diego City-County Department of Public Health, Calif.

J. F. MCCAHAN, M.D.,† former assistant secretary, Council On Industrial Health, American Medical Association, is now medical director of the Loss Prevention Department, New York Division, Liberty Mutual Insurance Co., New York City.

ELEANOR E. MCGUIRE, R.N., formerly health and education consultant for Time, Inc., has been appointed director of nursing services, National Foundation for Infantile Paralysis, New York City.

ELLA MUIR, formerly with the U. S. Public Health Service, is now nursing consultant, Ohio State Health Department.

MARION MURPHY, R.N.,* at present on the faculty of the School of Public Health, University of Michigan, has been appointed professor and director, Course in Public Health Nursing, University of Minnesota, Minneapolis, effective September, 1953.

RALPH C. PICKARD,† former director of the Evansville-Vanderburg (Ind.) Health Department's Environmental Sanitation Division, is now assistant sanitary engineer, Division of Public Health Engineering, Kentucky State Department of Health.

WATSON S. RANKIN, M.D.,* past-president, APHA, state health officer of North Carolina for 16 years, and since 1925 trustee of the Duke Endowment, Charlotte, N. C., received an award in the Methodist Hall of Fame in Philanthropy in recognition of his statemanship in public health.

ANNABEL RICKARD, recently of the staff of the University of Oregon, is now consulting nutritionist, Southwest District Office, Ohio State Health Department, headquarters Dayton.

ALBERT E. RUSSELL, M.D.,† retired Public Health Service physician, whose career has been devoted to the study and control of tuberculosis and silicosis, has become director of tuberculosis control, Arizona Health Department, Phoenix.

WILMA C. SACKS, M.D., for the past 5 years at the Brookhaven (N. Y.) National Laboratory, has been appointed medical director of Arkansas Health District No. 6, including Washington, Madison, and Benton Counties, with headquarters at Fayetteville.

LEO F. SCHIFF, M.D.,* has retired as health officer of Plattsburg and director of the Clinton County Laboratory (New York) after 30 years of service.

JAMES K. SHAFER, M.D., M.P.H.,* who has been assistant chief, Venereal Disease Division, Public Health Service, Washington, D. C., has been appointed chief of the same division, and CLARENCE A. SMITH, M.D., M.P.H., who has been venereal disease control officer for the City of Chicago for the past two years, has been named assistant chief.

IRVING S. SHAPIRO,* director of health education, Health Insurance Plan of Greater New York, has been appointed educational consultant, Family Health Maintenance Demonstration of the Division of Social Medicine, Montefiore Hospital, New York City.

HOWARD JOHN SHAUGHNESSEY, PH.D.,* director of laboratories, Illinois State Health Department and professor and head of the Department of Public Health, University of Illinois, College of Medicine, is being given the sixth annual award of the Society of Illinois Bacteriologists for outstanding contributions to the science of bacteriology at a meeting of the society on May 16.

M. MICHAEL SIGEL, PH.D.,† since 1946 assistant professor of virology, University of Pennsylvania, has joined the staff of the Virus and Rickettsia Laboratory of the Communicable Disease Center, Montgomery, Ala.

WILLIAM R. STINGER, M.D., M.P.H.,† Senior Assistant Surgeon, U. S. Public Health Service and former director, Florida Crippled Children's Commission, is now stationed at the Wayne County Health Department, Eloise, Mich., as director, Division of Venereal Disease Control.

HERMAN F. STRONGIN, M.D., M.P.H.,† has been named director of health of Middletown, Conn., to succeed MARIO L. PALMIERI, M.D., who has been acting health officer since July, 1952.

DAVID B. THORNBURGH, M.D., has become the commissioner of health of Ross County-

* Fellow.
† Member.

Chillicothe, with headquarters in Chillicothe, Ohio.

DR. HORACE THORNTON, chief veterinary officer for the City and County of Newcastle-on-Tyne, England, and consultant in food hygiene to WHO and the FAO, is in India for 3 months on the request of the government to advise on the introduction of a modern and scientific approach to the inspection of foods of animal origin, slaughter-house construction and operation, and food-market practices.

W. H. WILLIE, M.D., former practicing physician of Painesville, Ohio, has been appointed health commissioner of Lake County, Ohio, which has previously been without a full-time medical director.

ERNEST J. WITTE, D.V.M., M.P.H.,† recently with the Veterinary Section of the U. S. Public Health Service, Communicable Disease Center, Atlanta, Ga., has been appointed a public health veterinarian, Pennsylvania State Health Department, in which a Division of Veterinary Public Health will be established in the near future.

JOHN E. ZUR, D.D.S., previously a dental consultant in regional offices of the department has been appointed acting deputy director in charge of the Division of Dental Health, Illinois Department of Public Health, Springfield, succeeding JOHN E. CHRIETZBERG, D.D.S.,† who has resigned to accept a similar position in the Georgia State Health Department, Atlanta.

DEATHS

ALEXANDER W. BURKE, M.D.,† district officer, local health administration, Illinois Department of Public Health, on March 6 (Epidemiology Section).

CHARLES PORTER, M.D., London, England, an Honorary Fellow of the American Public Health Association since 1931 (Unaffiliated).

ALBERT H. ROHNER,† health officer of Madison, N. J., on February 24, at the age of 44 after a heart attack (Health Officers Section).

JOHN F. SKINNER,* sanitary engineer, Rochester, N. Y., for over 40 years and recently in consulting work in southern California on March 13, at the age of 82 (Engineering Section).

WALTER WILKINS, M.D.,* former director, Nutrition Investigations and Services, State Board of Health, Jacksonville, Fla., and more recently in private practice, on March 2 in Jacksonville (Food and Nutrition Section).

CONFERENCES AND DATES

American Public Health Association. 81st Annual Meeting, New York, N. Y., November 9–13.

Coming in May, June, and July:

Air Pollution Control Association. Lord Baltimore Hotel, Baltimore, Md. May 25–28.

American Association of Social Workers. Cleveland Hotel, Cleveland, Ohio. May 29–31.

American Diabetes Association. Annual Meeting. New York, N. Y. May 30–31.

American Geratrics. 10th Annual Meeting. Commodore Hotel, New York, N. Y. May 28–30.

American Home Economics Association. Kansas City, Mo. June 23–26.

American Library Association. Los Angeles, Calif. June 21–27.

American Medical Association. Annual Session. New York, N. Y. June 1–5.

American National Red Cross. Annual Convention. Washington, D. C. June 22–24.

American Physical Therapy Association. Baker Hotel, Dallas, Tex. June 15–19.

American Psychiatric Association. Annual Meeting. Los Angeles, Calif. May 4–7.

American Veterinary Medical Association. Annual Meeting. Toronto, Ontario, Canada. July 20–23.

American Water Works Association:
- Annual Meeting. Grand Rapids, Mich. May 10–15.
- New Jersey Section. Summer Outing. Finderne. June 10.
- Pennsylvania Section. Hershey Hotel, Hershey. June 17–19.

Amherst Health Conference. Massachusetts Public Health Association. June 17–19.

Connecticut Public Health Association. Norwich, Conn. May 7.

International Congress for Medical Librarians. London, England. July 20–25.

International Congress of Radiology. Copenhagen, Denmark. July 19–25.

International Fertility Association. First World Congress. New York, N. Y. May 25–31.

International Hospital Congress. London, England. May 25–30.

Massachusetts Public Health Association. Amherst. June 17–19.

Michigan Public Health Association. Grand Rapids. May 20–22.

Missouri Public Health Association. Governor Hotel, Jefferson City. May 4–6.

National Association of Clinical Laboratories. Atlantic City, N. J. May 15–17.
National Education Association. Roney Plaza Hotel, Miami Beach, Fla. June 28–July 3.
National Conference of Social Work. Cleveland, Ohio. May 31–June 5.
National League for Nursing. Cleveland, Ohio. June 22–26.
National Tuberculosis Association. 49th Annual Meeting. Los Angeles, Calif. May 17–22.
New England Health Institute. Rhode Island University, Kingston, R. I. June 10–12.
New York State Public Health Association. Lake Placid, N. Y. June 1–4.
Planned Parenthood Federation of America. Annual Meeting. Waldorf Astoria Hotel, New York, N. Y. May 6–7.
Tennessee Public Health Association. Andrew Jackson Hotel, Nashville. May 18–20.
Western Branch, APHA. Biltmore Hotel, Los Angeles, Calif. June 10–13.
West Virginia Public Health Association. Daniel Boone Hotel, Charleston. May 7–8.
World Health Organization—World Health Assembly. Geneva, Switzerland. May 5.

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Reprints from the American Journal of Public Health

Bacterial Cleanability of Various Types of Eating Surfaces. [February, 1953.] 12 pp. 25c.
Bibliography of Public Health Motion Pictures and Film Strips. [April, 1950.] 4 pp. 15c.
Congressional Hearings on Water-Borne Fluorides. [May, 1952.] 5 pp. 15c.
Improvement of Local Housing Regulation Under the Law. [Nov., 1942.] 16 pp. 25c.
Lemuel Shattuck—Still a Prophet. [February, 1949.] 27 pp. 25c.
The Local Health Department—Services and Responsibilities. An official statement of the American Public Health Association. [1950.] 8 pp. 10c.
Opportunities of the Industrial Hygiene Section. C.-E. A. Winslow. [November, 1950.] 8 pp. Free.
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by

WILLIAM A. HADFIELD
Technical Service Department
Pennsylvania Salt Manufacturing Company

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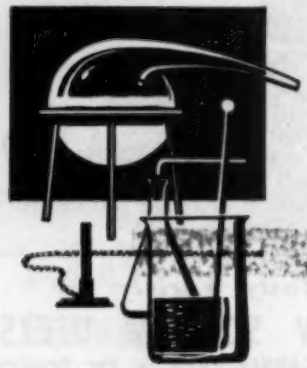

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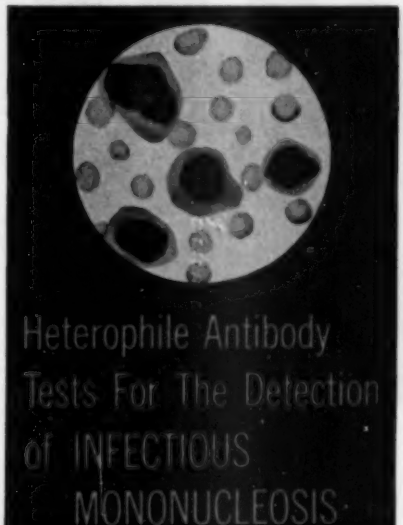

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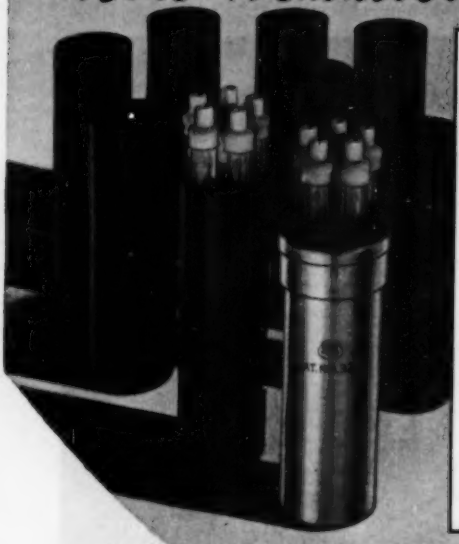

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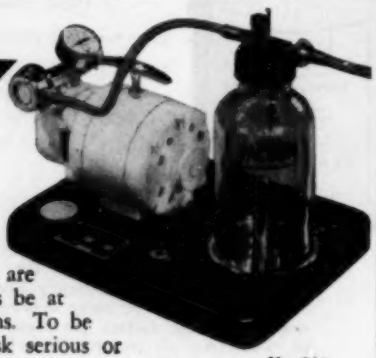

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